USER and REFERENCE MANUAL

Crocus CNV

USER and REFERENCE MANUAL

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This equipment, for safety and hygiene purposes, complies with the specific provisions contained in *ARAB/RGPT 54 quater 3.1* (RD 20 06 1975, Art.1, Section X, Accident Prevention Policy).

Safety requirements

The interfaces on the Crocus CNV should only be connected to circuit types as listed below.

Connector	Interface	Circuit
RJ45	G.703 interface	SELV
subD	management	SELV

Carefully read the safety instructions at the beginning of Chapter 2 - Installing and connecting the Crocus CNV, page 7.

Statements

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Hereby, TELINDUS declares that this Crocus CNV is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Bij deze verklaart TELINDUS dat deze Crocus CNV in overeenstemming is met de essentiële vereisten en andere relevante bepalingen van Richtlijn 1999/5/EC.

Par la présente, TELINDUS déclare que ce Crocus CNV est en conformité avec les exigences essentielles et autres articles applicables de la Directive 1999/5/EC.

Hiermit, TELINDUS erklärt daß dieser Crocus CNV ist in Fügsamkeit mit den wesentlichen Anforderungen und anderen relevanten Bereitstellungen von Direktive 1999/5/EC.

Mediante la presente, TELINDUS declara que el Crocus CNV cumple con los requisitos esenciales y las demás prescripciones relevantes de la Directiva 1999/5/CE.

A TELINDUS declara que o Crocus CNV cumpre os principais requisitos e outras disposições da Directiva 1999/5/EC.

Col presente, TELINDUS dichiara che questo Crocus CNV è in acquiescenza coi requisiti essenziali e stipulazioni attinenti ed altre di Direttivo 1999/5/EC.

Με το παρόν, η TELINDUS δηλώνει ότι αυτό το Crocus CNV είναι συμμορφούμενο με τις βασικές απαιτήσεις και με τις υπόλοιπες σχετικές διατάξεις της οδηγίας 1999/5/EC.

Preface

Organisation of this manual

This manual contains three main parts.

Part	This part …
User manual	shows you how to install and connect the Crocus CNV.
Reference manual	gives more detailed information on the Crocus CNV. It contains a complete description for lookup purposes.
Annexes	gives additional information.

The following table gives an overview of the chapters in the user manual.

Chapter	This chapter …
1	introduces the Crocus CNV.
2	explains how to install and connect the Crocus CNV. It also describes the front panel LED indicators.
3	locates the DIP switches and straps of the Crocus CNV on the motherboard. It also explains their function.
4	introduces the Telindus Maintenance Application. It shows how to connect TMA with the Crocus CNV. It is also in this chapter that the attributes of the Crocus CNV are introduced.
5	teaches you the basics to configure the Crocus CNV, in a step-by-step manner.

The following table gives an overview of the chapters in the reference manual.

Chapter	This chapter …
6, 7, 8, 9	describes the configuration, status, performance and alarm attributes, respectively.
10	displays and labels the different elements of the Telindus Maintenance Application subsystem picture.
11	gives a firmware download procedure.
12	uncovers the available diagnostic tests.
13	summarises the technical specifications of the Crocus CNV.

The following table gives an overview of the annexes.

Annex	This annex …
Annex A	gives a list of abbreviations.
Annex B	shows ordering information.

Conventions used in this manual

Typographical conventions

The following typographical conventions are used in this manual.

The format …	is used to indicate …
Normal	normal text.
Italic	• new or emphasised words • file names and directory paths, e.g. *C:\Program Files\TMA\bin\Tma.exe*
`Computer`	computer output and code examples, e.g. `NOK,1,1,Invalid command`.
`Computer Bold`	text you have to enter at the prompt, e.g. **`Get sysName`**.
Narrow	objects and attributes in the containment tree of a device when they are mentioned in the normal text. I.e. when they are not a part of computer input or output.
Blue	references to other parts in the manual, e.g. refer to Chapter xx - Technical specifications.
Blue underlined	a hyperlink to a web site, e.g. http://www.telindus.com

Icons

The following icons are used throughout the manual.

Icon	Name	Description
	Remark	Useful information or tips.
	Caution	Read the text that follows carefully in order to avoid damage to the device.
	Warning	Read the text that follows carefully in order to avoid injury.
	DIP switch	A configuration attribute of the Crocus CNV which can be set with the DIP switches.
	Basic TMA parameter	A basic attribute of the Crocus CNV which can be set with the Telindus Maintenance Application (TMA).
	Advanced TMA parameter	An advanced attribute of the Crocus CNV which can be set with the Telindus Maintenance Application (TMA).
	Action	An action which can be executed on the Crocus CNV with the Telindus Maintenance Application (TMA).

Firmware version

This manual describes the features, containment tree and attributes of the Crocus CNV firmware version T2771/00500 (CV) and T2772/00100 (TT).

Your feedback

Your satisfaction about this purchase is an extremely important priority to all of us at Telindus. Accordingly, all electronic, functional and cosmetic aspects of this new unit have been carefully and thoroughly tested and inspected. If any fault is found with this unit or should you have any other quality-related comment concerning this delivery, please submit the Quality Comment Form on our web page http://www.telindus.com/accessproducts.

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User manual

1. Introduction to the Crocus CNV

This chapter gives an introduction to the Crocus CNV. The following table gives an overview of this chapter.

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1.1 Introducing the Crocus CNV

In modem projects there is often a need for interface converters. The Crocus CNV (Interface Converter) is such a converter.

The Crocus CNV offers the following features:

- G.703 interface onboard and 1 modular DTE interface
- G.703 interface includes a line driver to cover long distances
- extended management possibilities for configuration and inspection purposes
- easy test functions
- flash memory for easy firmware updating
- as the other Crocus products, the Crocus CNV fits in the CN4 card nest
- different powering possibilities through the CN4 card nest (230/115 Vac or -48 Vdc)

1.2 Crocus CNV product overview

The following Crocus CNV types exist:

Type	Specific property
Crocus 2M CNV	This is a 2 Mbps transparent G.703 to modular Crocus interface converter.
Crocus Nx64 CNV	This is a 2 Mbps G.703/G.704 to modular Crocus interface converter.

The Crocus CNV is available in the following versions:

Version	Specific property
Table Top (TT)	The Table Top version is the stand-alone version of the Crocus CNV. It is available with or without an LCD display and keyboard. Only the Crocus Nx64 CNV is available as Table Top.
Card Version (CV)	The Card Version (CV) has to be inserted into a CN4 card nest. It incorporates two Crocus CNV converters on one card (A and B). As a result, one CN4 card nest can contain up to 30 converters. Both Crocus 2M CNV and Crocus Nx64 CNV are available as Card Version.

Both Table Top and Card Version can be powered with 230/115 Vac, -48 Vdc or 48 Vac. The Card Versions are powered via the CN4 card nest.

1.3 Modular interface overview

A complete range of plug-in modular DTE interfaces can be used in conjunction with the Crocus CNV. All these modular DTE interfaces can be exchanged in only a few seconds.

The Crocus CNV only supports *transparent* DTE interfaces. The following table lists the DTE interfaces modules which can be used in the Crocus CNV:

- V35
- V36
- RS530
- X21
- Bridge
- Router.

1.4 CN4 card nest

The Telindus CN4 card nest is based on a standard card nest which fits in a standard 19” rack. The CN4 card nest can hold up to 15 cards. It can be powered with:

- -48 Vdc (no power modules required)
- 230/115 Vac (one or two power module(s) required)
- both -48 Vdc and 230/115 Vac (for back-up purposes).

The CN4 card nest supports the complete Crocus range.

For more information on the CN4 card nest, refer to the CN4 manual.

1.5 Management overview

The Crocus CNV is manageable in different ways:

- You can connect the Telindus Maintenance Application (TMA) to the Crocus CNV over a serial connection (i.e. through the auxiliary connector).
- The Crocus CNV can be connected to the Orchid 1003 LAN management concentrator. This allows a number of management solutions like:
  - SNMP. When using the Orchid 1003 LAN as a proxy, the Crocus CNV supports MIB2 and a private MIB, including traps. The private MIB comes with your copy of TMA. After installation of the TMA data files, the private MIB file is available in directory *C:\Program Files\TMA\snmp* with the name *cicmo.mib*. (The first part of the directory path may be different if you did not choose the default path during the installation of the TMA data files.)
  - TMA CLI. This is an advanced Command Line Interface with extra scripting capabilities. Contact your distributor for more information on this product.
  - TMA for HP OpenView®. This is the Telindus integrated management application that runs on the HP OpenView® platform. Contact your distributor for more information on this product.

2. Installing and connecting the Crocus CNV

First this chapter gives some important safety instructions. Then it explains how to install and connect the Crocus CNV.

You are advised to read this chapter in a sequential manner, from the beginning to the end, without skipping any part. By doing so, your Crocus CNV will be completely installed and ready for configuration when you reach the end of this chapter.

The following table gives an overview of this chapter.

Section	Title	Page
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2.5	Connecting the Crocus CNV Table Top	10
2.6	Connecting the Crocus CNV Card Version	15
2.7	Connecting the interfaces of the Crocus CNV	21
2.8	Front panel LED indicators	22

2.1 Safety instructions

IMPORTANT SAFETY INSTRUCTIONS

Unplug the unit from the wall power outlet (TT) or remove it from the card nest (CV) before installing, adjusting or servicing.

The safety of this product depends upon the third pin (ground pin) of the 3-wire grounding type plug. Do not defeat this safety feature. If the power outlet at your site only has 2 pins, please consult a qualified electrician.

ACHTUNG! WICHTIGE SICHERHEITSINSTRUKTIONEN

Vor sämtlichen Arbeiten am Gerät (Installation, Einstellungen, Reparaturen etc.) sollten Sie den Netzstecker aus der Steckdose ziehen.

Die Sicherheit dieses Gerätes ist abhängig von dem dritten Kontakt (dem Erdungspin) des 3-poligen Steckers. Beachten Sie unbedingt diese Sicherheitsstandard. Sollten Sie nur eine ältere 2-polige Steckdose zur Verfügung haben, lassen Sie diese von einem Elektriker gegen eine 3-polige Steckdose auswechseln.

SAFETY WARNING

To avoid damage to the unit, please observe all procedures described in this chapter.

SICHERHEITSBESTIMMUNGEN

Um eine Beschädigung des Gerätes zu verhindern, beachten Sie bitte unbedingt die Sicherheitsbestimmungen, die in diesem Abschnitt beschrieben werden.

Ensure that the unit and its connected equipment all use the same AC power and ground, to reduce noise interference and possible safety hazards caused by differences in ground or earth potentials.

2.2 Unpacking

Rough handling during shipping causes most early failures. Before installation, check the shipping carton for signs of damage:

- If the carton box is damaged, please place a claim with the carrier company immediately.
- If the carton box is undamaged, do not dispose of it in case you need to store the unit or ship it in the future.

2.3 Selecting a site

WARNING

In case of a TT, always place the unit on its feet without blocking the air vents.

Do not stack multiple units directly onto each other, as stacking can cause heat build-up that could damage the unit.

ACHTUNG

Stellen Sie das Gerät niemals seitlich, sondern nur auf den Füßen auf und achten Sie darauf, daß die Lüftungsschlitze an der Seitenverkleidung frei bleiben.

Stapeln Sie nicht mehrere Geräte direkt übereinander, dies kann zu einem Hitzestau führen.

Install the unit in an area free of extreme temperatures, humidity, shock and vibration. Position it so that you can easily see and access the front panel and its control indicators. Leave enough clearance at the back for cables and wires. Position the unit within the correct distances for the different accesses and within 2m of a power outlet.

2.4 Installation and connection precautions

ESD WARNING

The circuit boards are sensitive to electrostatic discharges (ESD) and should be handled with care. It is advisable to ensure an optimal electrical contact between yourself, the working area and a safety ground before touching any circuit board. Take special care not to touch any component or connector on the circuit board.

EMC WARNING

EMC compliant installation

The complete Crocus family and the CN4 card nest are fully EMC compliant. Because of the modular structure of the CN4 card nest, all unused slots (power slots, modem slots and interface slots) have to be covered with the appropriate blanking modules at installation time.

To ensure compliance with EMC directive 89/336/EEC, shielded cables or ferrite beads have to be used.

NOTE

This equipment may be powered by an IT power system.

ANMERKUNG

Das Gerät kann gespeist wurden durch ein IT power System.

2.5 Connecting the Crocus CNV Table Top

This section explains how to connect the Crocus CNV TT. The following table gives an overview of this section.

Section	Title	Page
2.5.1	Table Top connections	11
2.5.2	Connecting the power supply	12
2.5.3	Signal and protective ground interconnection	13
2.5.4	Inserting the DTE interface in the Table Top	14

2.5.1 Table Top connections

All the connections have to be made at the back of the Crocus CNV Table Top. The following figure gives a rear view of the Crocus CNV TT.

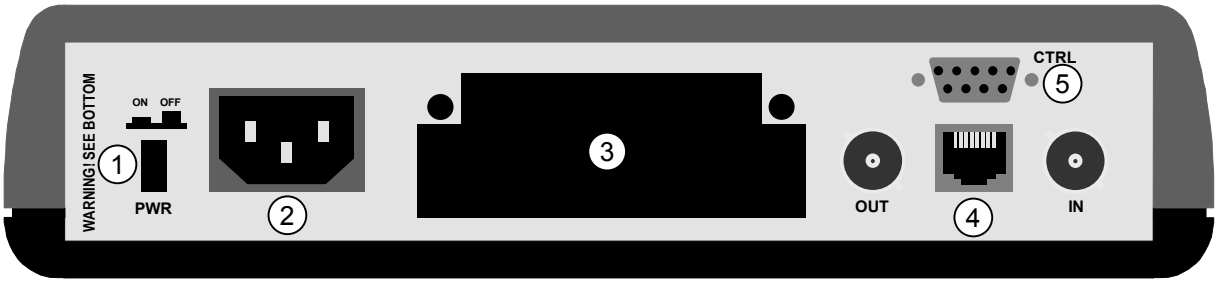


Figure 2.1: Rear view of the Crocus CNV TT – 230/115 Vac model

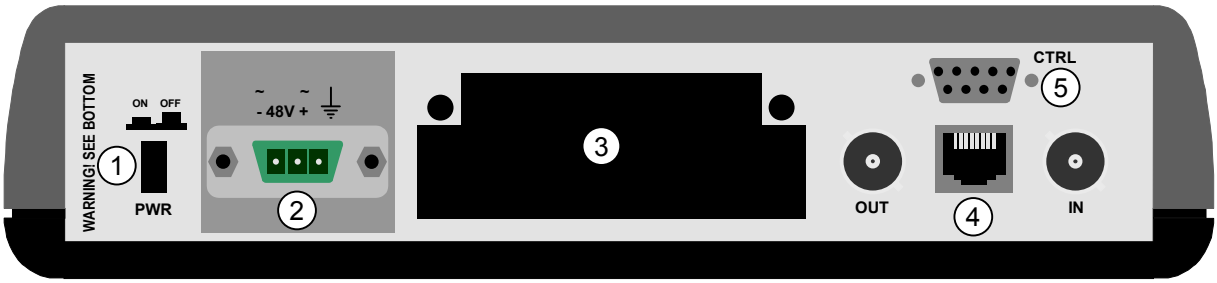


Figure 2.2: Rear view of the Crocus CNV TT – 48V model

The following table labels the different parts located at the back of the Crocus CNV TT.

Number	Part
1	power switch
2	power inlet
3	DTE interface slot
4	G703 onboard interface
5	auxiliary connector (also called control or NMS connector)

Table 2.1: Rear view of the Crocus CNV TT – parts table

2.5.2 Connecting the power supply

The following table explains how to connect the power supply. The Crocus CNV TT exists in two different models:

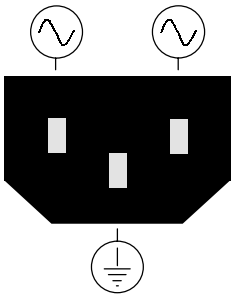
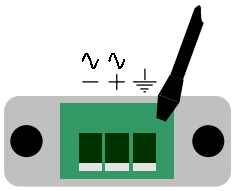
TT model	Connector type	Connecting the power supply
230/115 Vac	standard IEC power supply connector 	For a 230/115 Vac model, connect the standard IEC power supply connector to the power inlet. Refer to Figure 2.1: Rear view of the Crocus CNV TT – 230/115 Vac model.
-48 Vdc or 48 Vac	48 V power supply connector 	For a 48 V model, a power supply connector is delivered with the Crocus CNV: • For a –48 Vdc connection, the **+** and **-** indications are with respect to each other, not to ground level. This means that for a standard -48 Vdc connection, the ground has to be connected to **+**, while the negative voltage has to be connected to the **-**. • For a 48 Vac connection, the power supply has to be attached to the connectors indicated with **~**. When the 48 V power supply connector is wired, connect it to the power inlet. Refer to Figure 2.2: Rear view of the Crocus CNV TT – 48V model.

Table 2.2: Connecting the power supply

2.5.3 Signal and protective ground interconnection

You can configure the interconnection between signal ground and protective ground (earth). Do this by means of the appropriate strap located on the Crocus CNV TT motherboard. For more information, refer to Section 3.1.3 - Straps of the Table Top.

2.5.4 Inserting the DTE interface in the Table Top

At the back of the TT, an empty slot is provided in which you can insert the desired DTE interface module without opening the housing.

To insert the DTE interface in the TT, proceed as follows:

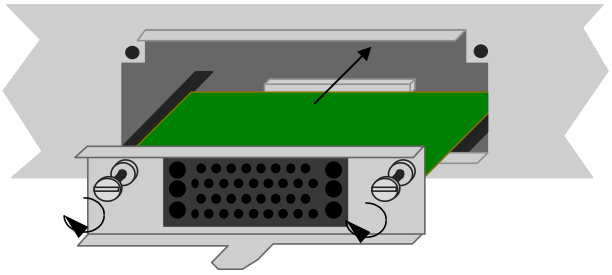
Step	Action
1	Gently slide the DTE interface on the two inner slides into the empty slot. The following figure shows this procedure: 
2	When nearly inserted, press tight.
3	Lock both screws.
4	When the DTE interface is present, connect the application.

Table 2.3: Inserting the DTE interface in the TT

2.6 Connecting the Crocus CNV Card Version

This section explains how to connect the Crocus CNV CV. The following table gives an overview of this section.

Section	Title	Page
2.6.1	Inserting the Card Version in the CN4 card nest	16
2.6.2	Inserting the modular DTE interface in the Card Version	17
2.6.3	Connecting to the onboard G703 using the RJ45 or line connector block	18
2.6.4	Connecting to the onboard G703 through the line connector block	20

2.6.1 Inserting the Card Version in the CN4 card nest

The Crocus CNV CV consists of a stuffed print, provided with a front panel. The CV has to be inserted in the CN4 card nest. Most connections to this card are performed via 3 DIN-connectors on the back of the card:

- the middle connector for power supply, line and management connections
- the two extreme connectors for interface connections.

Inserting the CV in the CN4 card nest

To insert the CV in the CN4 card nest, proceed as follows:

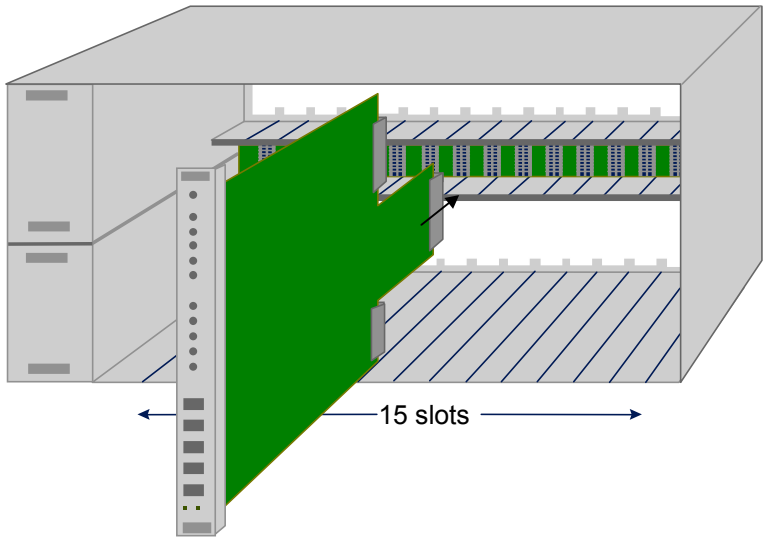
Step	Action
1	Gently slide the CV on the two inner slides into an available slot. The following figure shows this procedure: 
2	When nearly inserted, press tight.
3	Lock both screws.

Table 2.4: Inserting the CV in the CN4 card nest

Filling an entire CN4 card nest

For EMC reasons the cards all fit closely to each other. Therefore, you will experience that inserting the last card in a completely filled up rack happens to be more stiffly. To fill up an entire rack, it is best to proceed as follows:

Step	Action
1	Insert card 1 up to 14 in slot 0 up to 13 of the CN4 card nest.
2	Fasten the screws of card 1 up to 14.
3	Insert the last card in slot 14 of the CN4 card nest.
4	Fasten the screws of the last card.

Table 2.5: Filling an entire CN4 card nest

2.6.2 Inserting the modular DTE interface in the Card Version

At the back of the CN4 card nest, two empty slots are provided in which the desired modular DTE interface can be inserted without extracting the card from the card nest. The upper interface slot is used for converter A and the lower interface slot is used for converter B.

To insert the modular DTE interface in the CN4 card nest, proceed as follows:

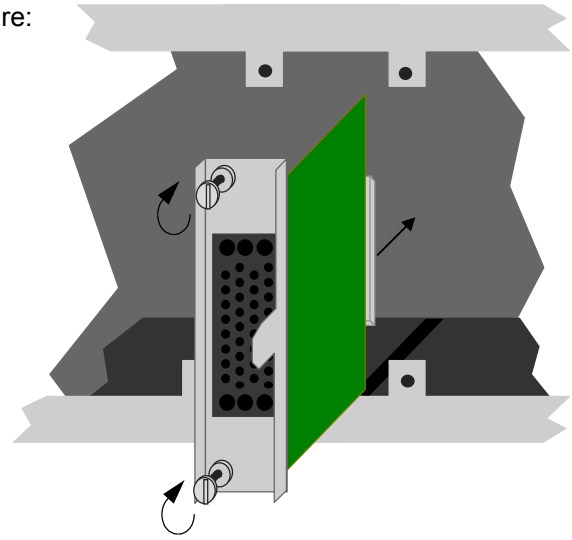
Step	Action
1	Gently slide the modular DTE interface on the two inner slides into an available slot. The following figure shows this procedure: 
2	When nearly inserted, press tight.
3	Lock both screws.
4	When the modular DTE interface is present, connect the application.

Table 2.6: Inserting the modular DTE interface in the CV

2.6.3 Connecting to the onboard G703 using the RJ45 or line connector block

You can connect to the onboard G703 interface through …

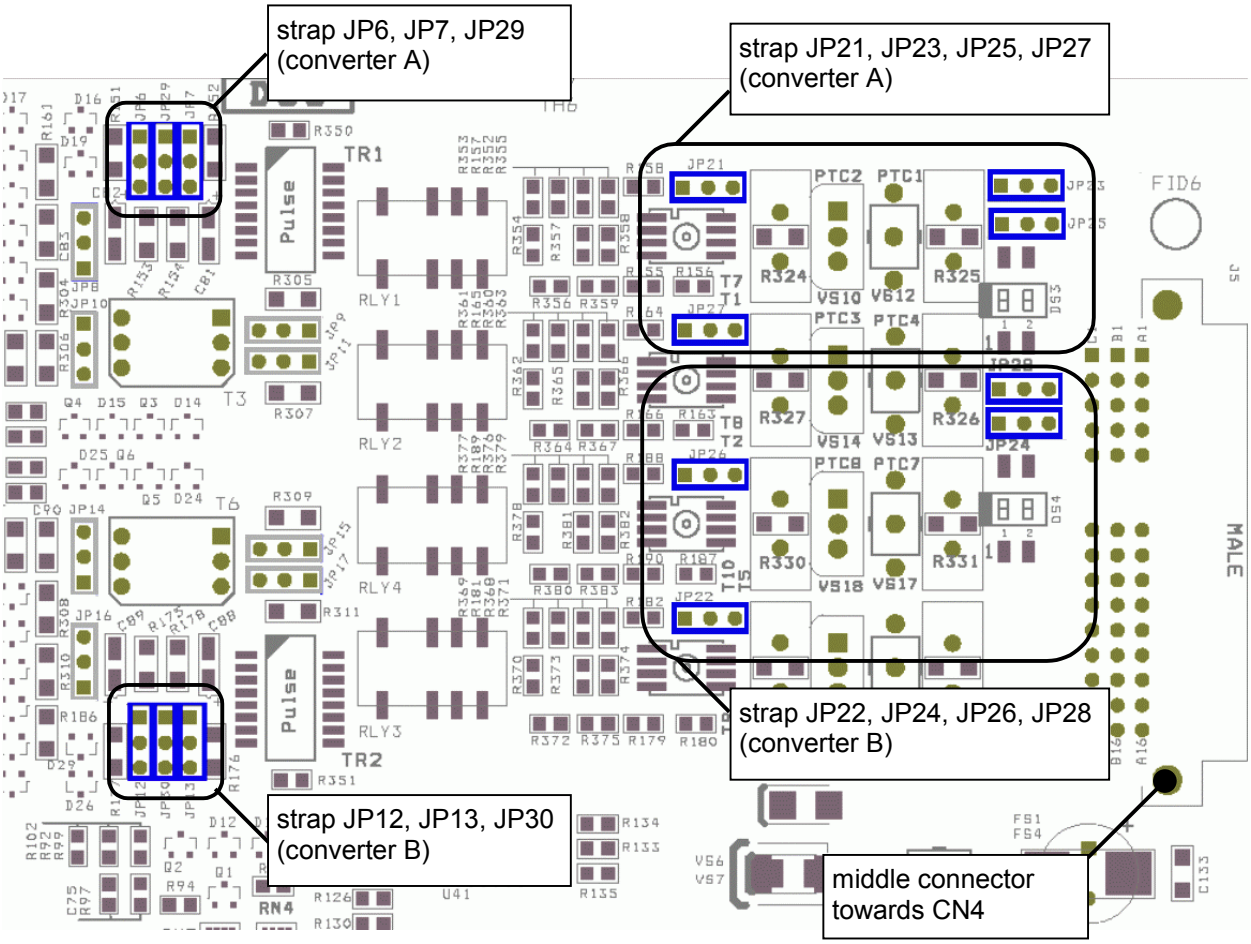
- the RJ45 connector located at the front of the Crocus CNV CV

or

- the line connector block located at the back of the CN4 card nest.

You can make this selection by means of 8 straps located on the Crocus CNV CV motherboard. This is described in the paragraphs below.

The location of the straps on the Crocus CNV CV motherboard



Continued on next page

Connecting to the onboard G703 using the RJ45 or line connector block (continued)

Strap JP21 – JP28 settings

You can make the RJ45 / line connector block selection for converter A and B separately:

- JP21, JP23, JP25, JP27 makes the selection for converter A
- JP22, JP24, JP26, JP28 makes the selection for converter B.

The following table shows how to set JP21 up to JP28 in order to select between the RJ45 connector or the line connector block.

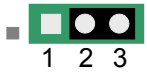
Strap setting	You can connect to the onboard G703 interface through …
1 – 2 (default) 	the RJ45 connector located at the front of the Crocus CNV CV.
2 – 3  	the line connector block located at the back of the CN4 card nest. Refer to Section 2.6.4 - Connecting to the onboard G703 through the line connector block for more information.

Table 2.7: Connecting to the onboard G703 using the RJ45 or line connector block

2.6.4 Connecting to the onboard G703 through the line connector block

It is possible to connect to the onboard G703 interface through the line connector block instead of through the RJ45 connectors (as explained in Section 2.6.3 - Connecting to the onboard G703 using the RJ45 or line connector block).

The following table explains how to connect the wires to the line connector block located at the back of the CN4 card nest:

Converter no.	RX / TX	Line connector block positions	DTE
converter A	receive	1 and 2	input
	transmit	3 and 4	output
converter B	receive	5 and 6	input
	transmit	7 and 8	output

Table 2.8: Connecting to onboard G703 through the line connector block

The following figure gives a graphical representation of the table above:

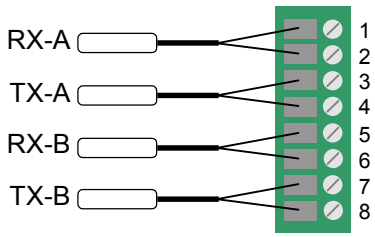


Figure 2.3: Connecting to onboard G703 through the line connector block

2.7 Connecting the interfaces of the Crocus CNV

The DTE/DCE definition of the Crocus CNV interfaces is as follows:

Interface	DTE / DCE	Interconnection cable
onboard G703	DTE	To connect this interface to … • a DTE device, use a *crossed* interconnection cable. • a DCE device, use a *straight* interconnection cable.
modular	DCE	To connect this interface to … • a DTE device, use a *straight* interconnection cable. • a DCE device, use a *crossed* interconnection cable.

The following figure shows an example of a set-up with a Crocus CNV:

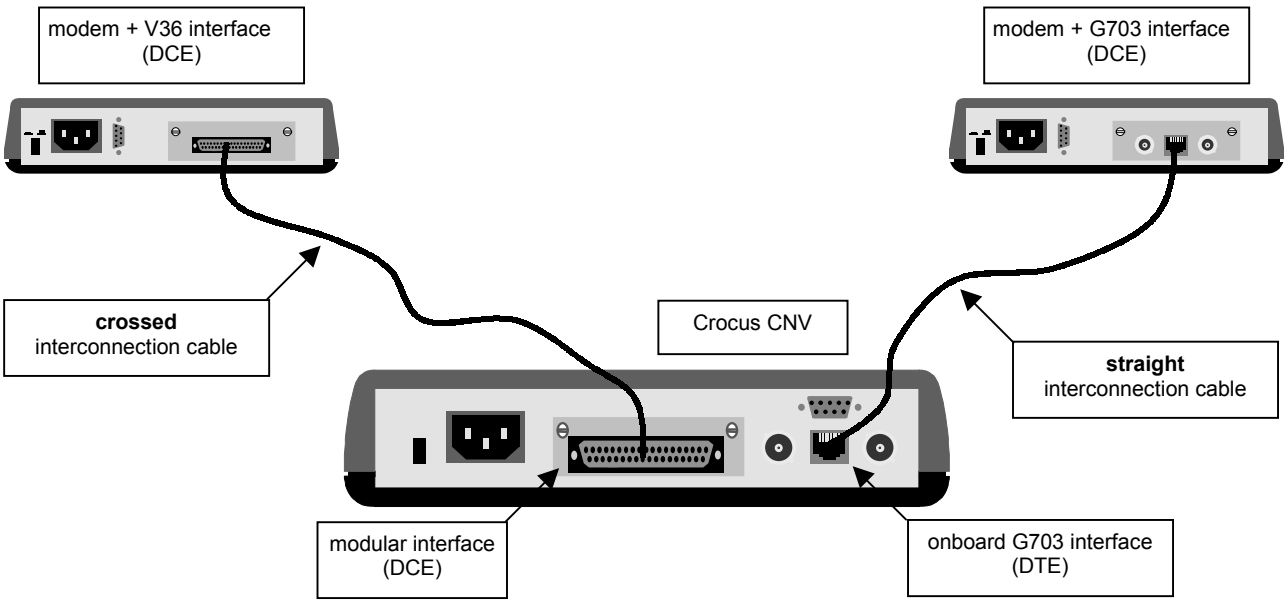


Figure 2.4: Connecting the interfaces of the Crocus CNV – an example

2.8 Front panel LED indicators

This section gives an overview of the front panel LEDs and what they indicate The following table gives an overview of this section.

Section	Title	Page
2.8.1	Introduction to the front panel LEDs	23
2.8.2	Power LED	24
2.8.3	Test LED	24
2.8.4	Alarm Indication Signal / error LED	24
2.8.5	Loss Of Signal / Loss of Frame Alignment LED	25
2.8.6	Transmit data LED	25
2.8.7	Receive data LED	25

2.8.1 Introduction to the front panel LEDs

When all the connections are made and the Crocus CNV is powered, the LEDs on the front panel reflect the actual status of the device.

LED label and colour

The following table lists the front panel LED indicators with their corresponding label and colour.

Label	Colour	Short description
PWR	green	Power indication.
142 TST	red	Test indication.
AIS ERR	red	Alarm Indication Signal / error indication.
LOS LFA	red	Loss Of Signal / Loss of Frame Alignment indication.
103 TXD	green	Transmit data indication.
104 RXD	green	Receive data indication.

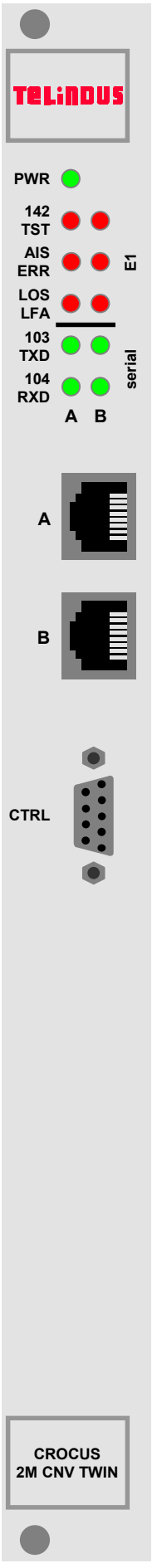
Table 2.9: Label and colour of the front panel LED indicators

LED status modes

For some front panel LED indicators different status modes exist. These status modes can be distinguished by the way the LED is lit up:

LED status	LED duty cycle	Description
continuously off	0 %	The LED never lights up.
continuously on	100 %	The LED lights up continuously.
blinking	50 %	The LED is as much lit as it is out.
flashing	20 %	The LED only lights up during 20% of the time.
mostly off	-	The LED occasionally lights up, without a fixed duty cycle.
mostly on	-	The LED occasionally goes out, without a fixed duty cycle.
monitoring	-	The LED lights up irregularly. For instance, it lights up on detection of a certain signal. I.e. it *monitors* this signal.

Table 2.10: Possible status modes of the front panel LED indicators



2.8.2 Power LED

This LED indicates that the Crocus CNV is connected to the power supply and is switched on.

2.8.3 Test LED

This LED indicates whether the Crocus CNV is in normal operation or in test condition (ET, AL, RDL, DL or a combination of them). Four different test LED status modes can be distinguished:

LED status	Description
off	No test is active.
continuously on	A front panel or interface test is active.
blinking	A test initiated by the management system is active.
flashing	A front panel or interface test has been terminated by the management system.

Termination of an active test by the management system is necessary to prevent hang-up situations caused by accidental activation of a test. Once the test indicator starts flashing, all active test conditions should be removed first, before initiating a new test session.

2.8.4 Alarm Indication Signal / error LED

This LED indicates an error has occurred. The errors have different priority levels. I.e. when two errors of different origin occur at the same time, one error will get priority over the other error. The different AIS / error LED status modes and error priorities are displayed in the following table:

LED status	Description	Error priority
off	No error has occurred.	-
continuously on	An Alarm Indication Signal (AIS) has been detected on the incoming G.704 transmit data of the onboard G703 interface. This means that the application has detected an error, and it communicates this to the interface by setting all data bits to 1 (which is the AIS condition).	high
monitoring	The Crocus CNV its internal error test pattern generator / detector (ET) is active and received bit errors.	medium
flashing	Alarm signalling is active and a local alarm has been detected. For more information on alarm signalling, refer to Section 6.2 - General configuration attributes.	low

2.8.5 Loss Of Signal / Loss of Frame Alignment LED

This LED indicates a Loss Of Signal or Loss of Frame Alignment has occurred. The different LOS / LFA LED status modes are displayed in the following table:

LED status	Description
continuously on	A Loss Of Signal has been detected on the onboard G703 interface. If the configuration attribute longHaul is set to enabled, then it is possible that the LOS LED does not light up although no cable is connected to the front RJ45 connector. This problem does not exist when using the rear line connector block.
blinking	A Loss of Frame Alignment has been detected on the onboard G703 interface.

2.8.6 Transmit data LED

This LED monitors the data sent by the application (i.e. the Data Terminal Equipment) to the DTE interface module of the Crocus CNV.

Note that the data is monitored after it went through the interface circuitry. Some interfaces (Bridge and Router) add framing information which activates the TXD LED even if no real user data is being transmitted.

2.8.7 Receive data LED

This LED monitors the data sent to the application (i.e. the Data Terminal Equipment) by the DTE interface module of the Crocus CNV.

Note that the data is monitored before it went through the interface circuitry. Some interfaces (Bridge and Router) used on the remote side add framing information which activates the RXD LED even if no real user data is being received.

3. DIP switches and straps of the Crocus CNV

This chapter locates the DIP switches and straps on the Crocus CNV TT and CV motherboard. It also gives an overview of their function and it explains how to change their settings.

The following table gives an overview of this chapter.

Section	Title	Page
3.1	DIP switches and straps of the Crocus CNV Table Top	27
3.2	DIP switches and straps of the Crocus CNV Card Version	33

Default settings are printed in **bold**.

3.1 DIP switches and straps of the Crocus CNV Table Top

This section locates the DIP switches and straps on the Crocus CNV Table Top motherboard. It gives an overview of their function and it explains how to change their settings.

The following table gives an overview of this section.

Section	Title	Page
3.1.1	Location of the DIP switches and straps on the Table Top	28
3.1.2	DIP switches of the Table Top	29
3.1.3	Straps of the Table Top	30
3.1.4	Changing DIP switch and strap settings of the Table Top	32

Disconnect the Crocus CNV Table Top from the mains before opening the housing to change DIP switch and/or strap settings.

3.1.1 Location of the DIP switches and straps on the Table Top

The figure below shows the position of the DIP switches and straps on the Crocus CNV TT motherboard.

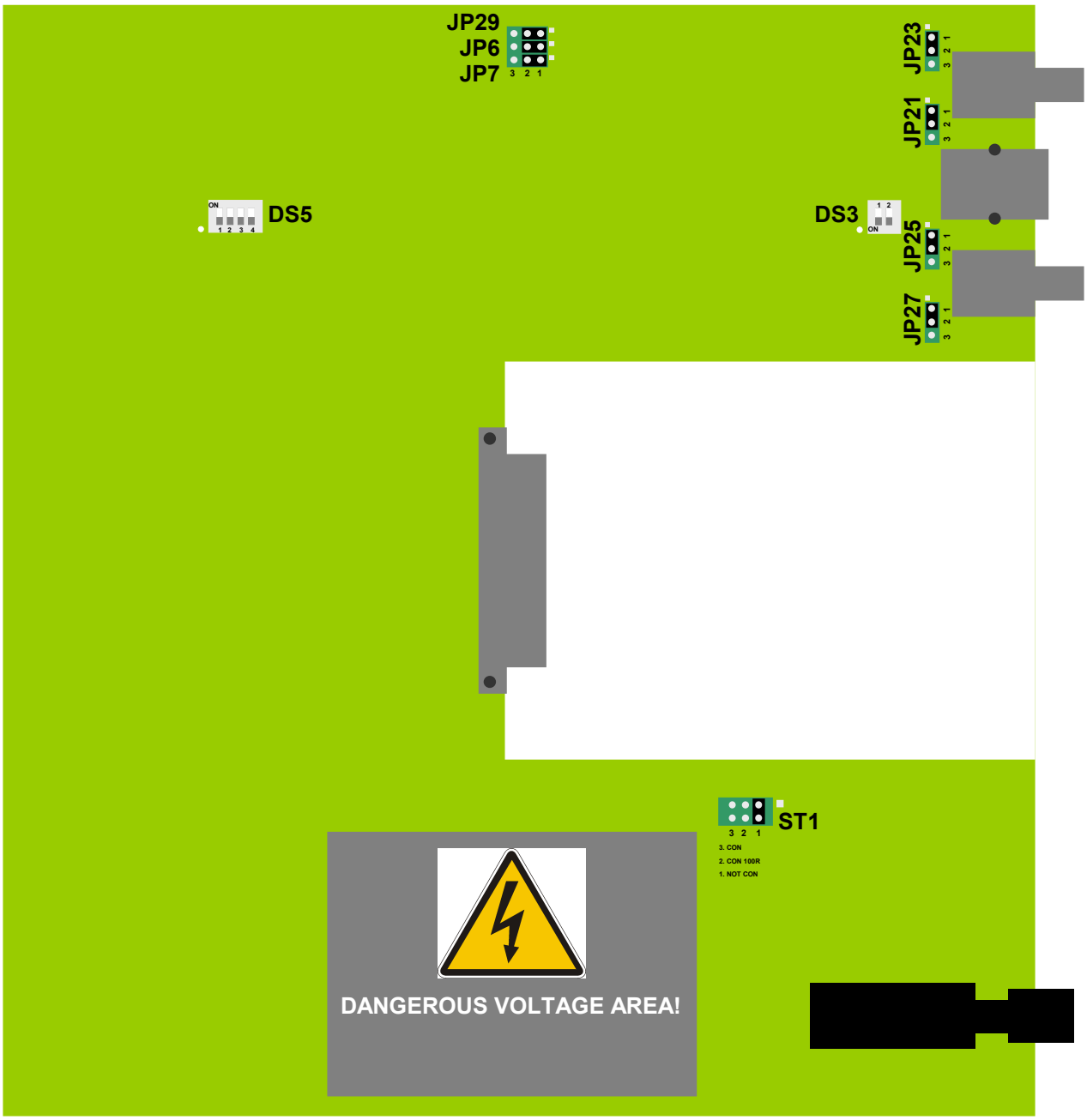


Figure 3.1: Location of the DIP switches and straps on the TT motherboard

3.1.2 DIP switches of the Table Top

DIP switch bank DS5

The following table gives an overview of DIP switch bank DS5 of the TT:

DIP switch name	DS5 no.	Setting	Function
start-up mode	1	**on**	Start up from flash memory.
		off	Start up in boot mode.
load default configuration	2	**on**	Normal operation.
		off	Load default configuration.
X21 Tx clock polarity inversion	3	**on**	Inverted X21 Tx clock polarity.
		off	Normal X21 Tx clock polarity.
-	4	-	- Factory setting. Do not change! -

Table 3.1: Function of DIP switch bank DS5 of the TT

DIP switch bank DS3

The following table gives an overview of the DIP switches on DIP switch bank DS3:

DIP switch name	DS3 no.	Setting	Function
signal B – earth (PGND) connection	1	on	The receive B signal (RxB) of the onboard G703 interface is *connected* to the earth.
		off	The receive B signal (RxB) of the onboard G703 interface is *disconnected* from the earth.
	2 (1)	on	The transmit B signal (TxB) of the onboard G703 interface is *connected* to the earth.
		off	The transmit B signal (TxB) of the onboard G703 interface is *disconnected* from the earth.

Table 3.2: Function of DIP switch bank DS3 of the TT

(1) DS3 switch 2 only has effect on the RJ45 connector. For the BNC connectors, the transmit B signal is *always* connected to the earth.

3.1.3 Straps of the Table Top

Strap ST1

On the TT, you can configure the interconnection between signal ground and protective ground (earth). Use strap ST1 for this purpose. For the location of ST1 on the TT motherboard, refer to Figure 3.1: Location of the DIP switches and straps on the TT motherboard.

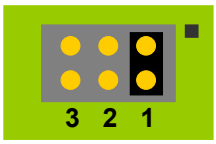
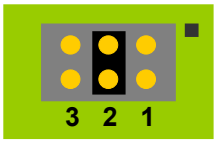
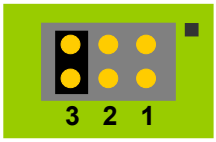
Strap settings	Connection	Description
	**disconnected**	As default, the signal ground is disconnected from the earth. This avoids problems which might occur when the earth potential of the Crocus CNV and the connected application is not the same. In such a situation earth current loops may induce distortion on the transmitted data, resulting in transmission errors.
	connected through 100 ohms resistor	Sometimes you might want to connect the *Crocus CNV earth* to the *application earth* although both earth potentials are not the same. (E.g. to avoid a big difference between both earth potentials.) To avoid that high earth currents are generated, you can make this connection through a 100 ohms resistor.
	directly connected	Sometimes it is not possible to connect the application directly to the earth. In that case you can earth the application through the Crocus CNV by connecting the Crocus CNV to the earth and setting strap ST1 in position 3. Also the opposite situation might occur: it is not possible to earth the Crocus CNV. In that case you can earth the Crocus CNV through the application by connecting the application to the earth and setting strap ST1 in position 3.

Table 3.3: Function of strap ST1 of the TT

Continued on next page

Straps of the Table Top (continued)

Straps JP21, JP23, JP25 and JP27

Use the straps JP21, JP23, JP25 and JP27 in order to select between the RJ45 connector or the BNC connectors.

Strap setting	You can connect to the onboard G703 interface through …
1 – 2 (default)	the RJ45 connector.
2 – 3	the BNC connectors.

Table 3.4: Function of straps JP21, JP23, JP25 and JP27of the TT

Straps JP6, JP7 and JP29

Use the straps JP6, JP7 and JP29 in order to select the line impedance of the onboard G703 interface.

Strap setting	The line impedance of the onboard G703 interface is …
1 – 2 (default)	120 ohm.
2 – 3	75 ohm.

Table 3.5: Function of straps JP6, JP7 and JP29 of the TT

3.1.4 Changing DIP switch and strap settings of the Table Top

To change the DIP switch settings of the Crocus CNV TT, proceed as follows:

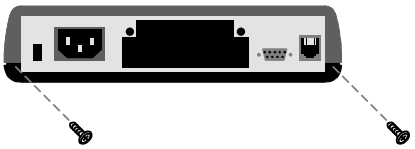
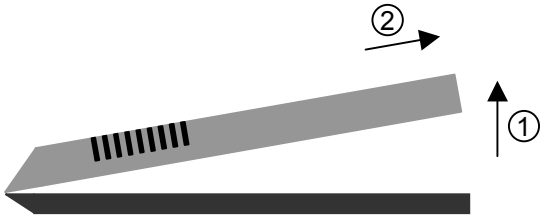
Step	Action
1	Switch the Crocus CNV TT off.
2	Disconnect the Crocus CNV TT from the mains.
3	Unscrew the two screws located at the back of the Crocus CNV TT. 
4	Remove the cover as follows: 1. Carefully lift the back of the cover a few centimetres. 2. Gently pull the cover backwards from under the nose of the Crocus CNV TT. 
5	Change the DIP switch and/or strap settings.
6	Replace the cover and close tight.
7	Fasten the two screws located at the back of the Crocus CNV TT.
8	Reconnect the Crocus CNV TT to the mains.
9	Switch the Crocus CNV TT on.

Table 3.6: Changing DIP switch and / or strap settings of the TT

3.2 DIP switches and straps of the Crocus CNV Card Version

This section locates the DIP switches and straps on the Crocus CNV Card Version motherboard. It gives an overview of their function and it explains how to change their settings.

The following table gives an overview of this section.

Section	Title	Page
3.2.1	Location of the DIP switches on the Card Version	34
3.2.2	Location of the straps on the Card Version	35
3.2.3	DIP switches of the Card Version	36
3.2.4	Straps of the Card Version	38
3.2.5	Changing DIP switch and strap settings of the Card Version	39

3.2.1 Location of the DIP switches on the Card Version

The figure below shows the position of the DIP switches on the Crocus CNV CV motherboard.

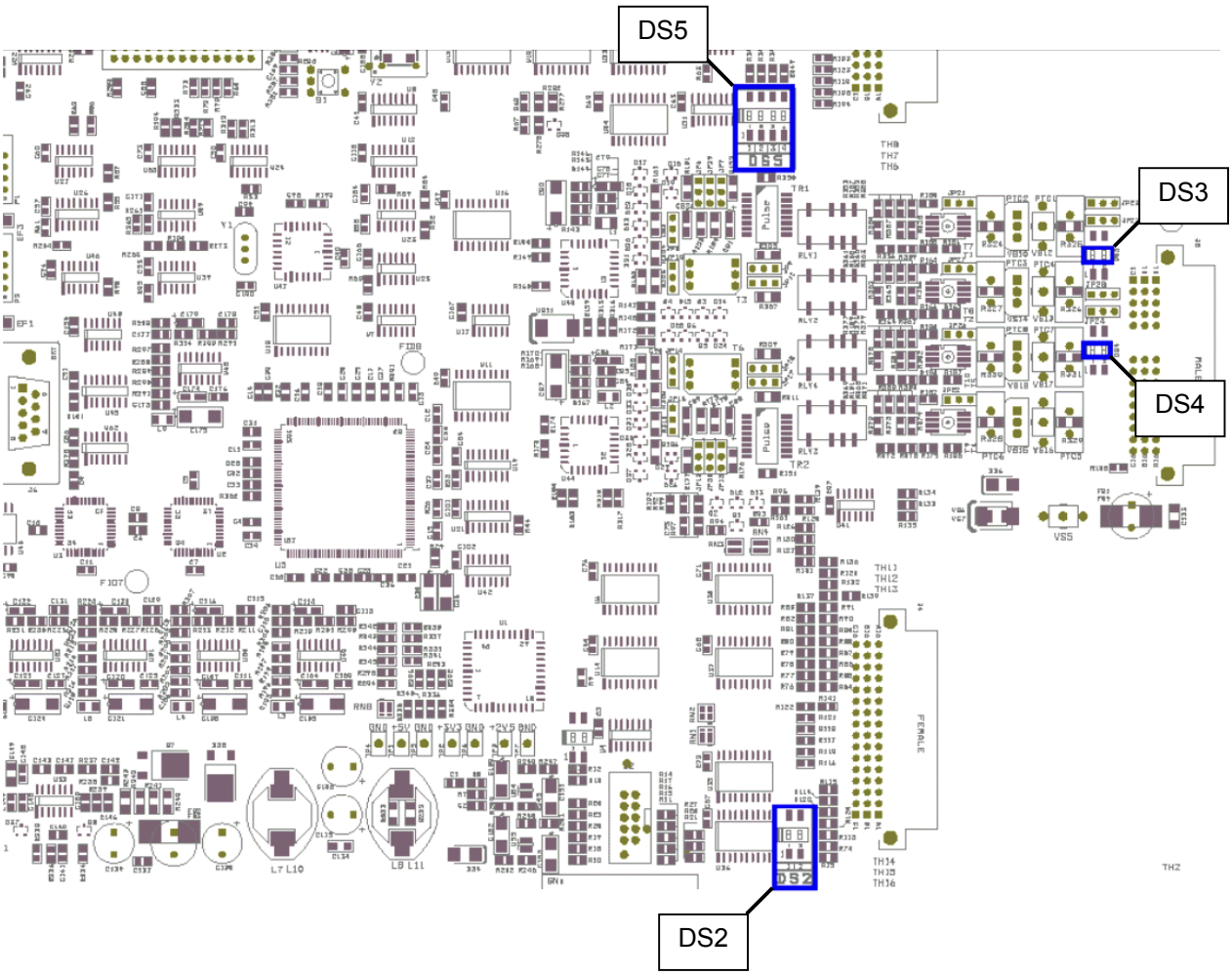


Figure 3.2: Location of the DIP switches on the CV motherboard

3.2.2 Location of the straps on the Card Version

The figure below shows the position of the straps on the Crocus CNV CV motherboard.

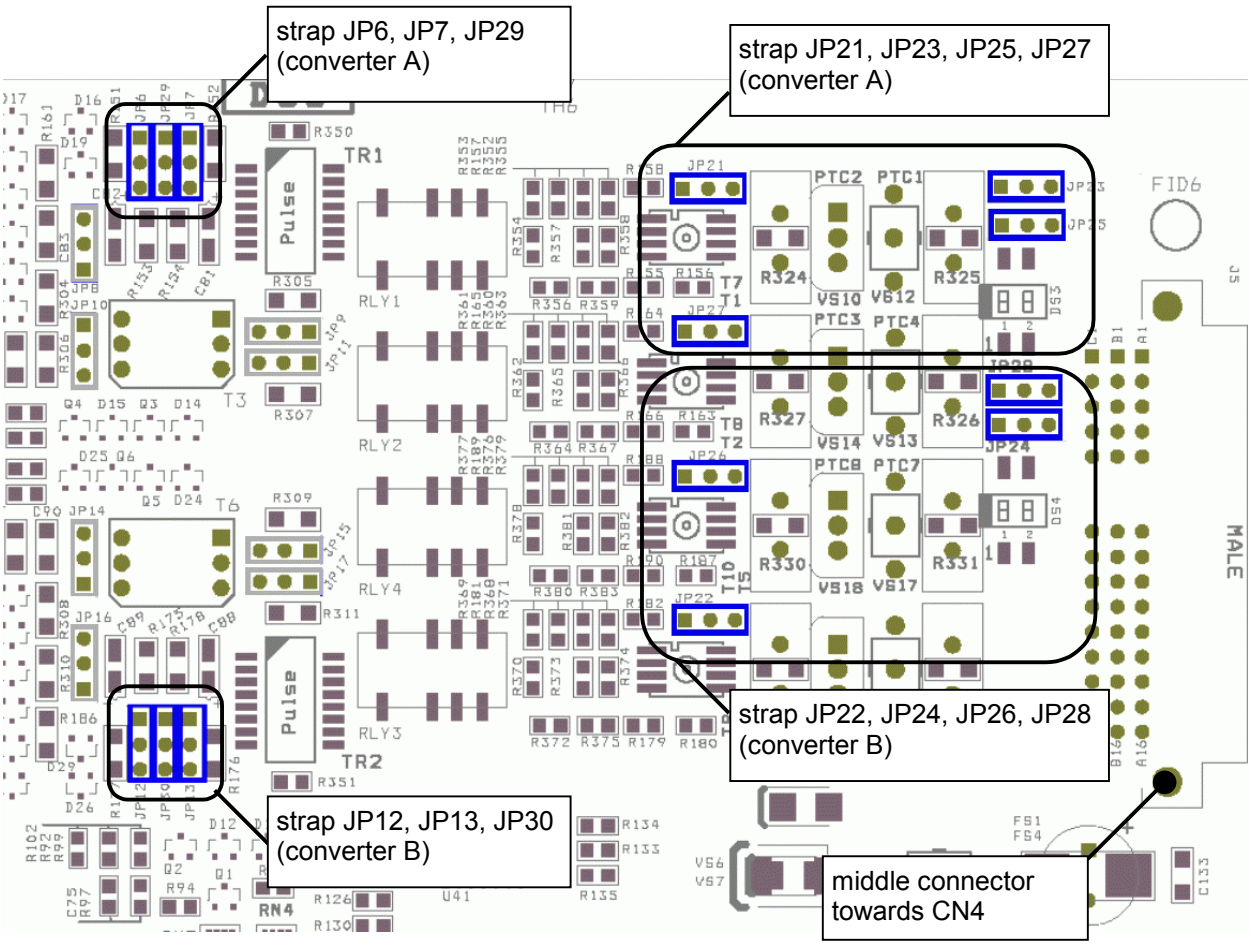


Figure 3.3: Location of the straps on the CV motherboard

3.2.3 DIP switches of the Card Version

DIP switch bank DS2

The following table gives an overview of the DIP switches on DIP switch bank DS2:

DIP switch name	DS2 no.	Setting	Function
start-up mode	1	**on**	Start up from flash memory.
		off	Start up in boot mode.
-	2	**on**	Mandatory setting. Do not change!
		off	-

Table 3.7: Function of DIP switch bank DS2 of the CV

DIP switch bank DS5

The following table gives an overview of the DIP switches on DIP switch bank DS5:

DIP switch name	DS5 no.	Setting	Function
load default configuration - converter A	1	**on**	Normal operation for converter A.
		off	Load default configuration for converter A.
load default configuration - converter B	2	**on**	Normal operation for converter B.
		off	Load default configuration for converter B.
X21 Tx clock polarity inversion - converter A	3	on	Inverted X21 Tx clock polarity for converter A.
		off	Normal X21 Tx clock polarity for converter A.
X21 Tx clock polarity inversion - converter B	4	on	Inverted X21 Tx clock polarity for converter B.
		off	Normal X21 Tx clock polarity for converter B.

Table 3.8: Function of DIP switch bank DS5 of the CV

Continued on next page

DIP switches of the Card Version (continued)

DIP switch bank DS3

The following table gives an overview of the DIP switches on DIP switch bank DS3:

DIP switch name	DS3 no.	Setting	Function
signal B – earth (PGND) connection for converter A	1	on	The receive B signal (RxB) of the onboard G703 interface of converter A is *connected* to the earth.
		off	The receive B signal (RxB) of the onboard G703 interface of converter A is *disconnected* from the earth.
	2	on	The transmit B signal (TxB) of the onboard G703 interface of converter A is *connected* to the earth.
		off	The transmit B signal (TxB) of the onboard G703 interface of converter A is *disconnected* from the earth.

Table 3.9: Function of DIP switch bank DS3 of the CV

DIP switch bank DS4

The following table gives an overview of the DIP switches on DIP switch bank DS4:

DIP switch name	DS3 no.	Setting	Function
signal B – earth (PGND) connection for converter B	1	on	The receive B signal (RxB) of the onboard G703 interface of converter B is *connected* to the earth.
		off	The receive B signal (RxB) of the onboard G703 interface of converter B is *disconnected* from the earth.
	2	on	The transmit B signal (TxB) of the onboard G703 interface of converter B is *connected* to the earth.
		off	The transmit B signal (TxB) of the onboard G703 interface of converter B is *disconnected* from the earth.

Table 3.10: Function of DIP switch bank DS4 of the CV

3.2.4 Straps of the Card Version

Straps JP21 → JP28

Use the straps JP21 up to JP28 in order to select between the RJ45 connector or the line connector block:

- JP21, JP23, JP25, JP27 makes the selection for converter A
- JP22, JP24, JP26, JP28 makes the selection for converter B.

Strap setting	You can connect to the onboard G703 interface through …
1 – 2 (default) 1 2 3	the RJ45 connector located at the front of the CV.
2 – 3 1 2 3	the line connector block located at the back of the CN4 card nest. For more information, refer to Section 2.6.3 - Connecting to the onboard G703 using the RJ45 or line connector block.

Table 3.11: Function of straps JP21 → JP28 of the CV

Straps JP6, JP7, JP12, JP13, JP29 and JP30

Use the straps JP6, JP7, JP12, JP13, JP29 and JP30 in order to select the line impedance of the onboard G703 interface:

- JP6, JP7, JP29 makes the selection for converter A
- JP12, JP13, JP30 makes the selection for converter B.

Strap setting	The line impedance of the onboard G703 interface is …
1 – 2 (default) 1 2 3	120 ohm.
2 – 3 1 2 3	75 ohm.

Table 3.12: Function of straps JP6, JP7, JP12, JP13, JP29 and JP30 of the CV

3.2.5 Changing DIP switch and strap settings of the Card Version

To change the DIP switch and / or strap settings of the Crocus CNV CV, proceed as follows:

Step	Action
1	Loosen the screws of the Crocus CNV.
2	Gently pull the Crocus CNV out of the CN4 card nest.
3	Change the DIP switch and / or strap settings.
4	Gently slide the Crocus CNV in the CN4 card nest.
5	Fasten the screws of the Crocus CNV.

Table 3.13: Changing the DIP switch and / or strap settings of the CV

4. Maintenance of the Crocus CNV

Once you installed the Crocus CNV, you can proceed with the configuration of the Crocus CNV. You can do this using the Telindus Maintenance Application (TMA).

This chapter introduces TMA and describes how to start a session on the Crocus CNV. Furthermore, this chapter gives an introduction to the attributes of the Crocus CNV.

Section	Title	Page
4.1	Introducing TMA	41
4.2	Connecting to a Crocus CNV with TMA	42
4.3	Introducing the management attributes of the Crocus CNV	45

4.1 Introducing TMA

TMA is a free Windows® software package that enables you to maintain the Crocus CNV, i.e. to access its *configuration* attributes and look at *status*, *performance* and *alarm* information using a user friendly graphical user interface.

TMA is an excellent tool for complete management of the Telindus access devices. When using TMA in combination with a network management system such as HP OpenView®, complete networks can be managed from one central site.

Consult the TMA user manual to install it and get acquainted with the TMA user interface.

You will need a new version of the model file distribution if changes have been made to the attributes of the Crocus CNV. The most recent model files and TMA engine can always be downloaded from the Telindus web site. Go to http://www.telindus.com/accessproducts and select *Products* → *Maintenance & Management* → *TMA Maintenance* → *Download TMA software*.

4.2 Connecting to a Crocus CNV with TMA

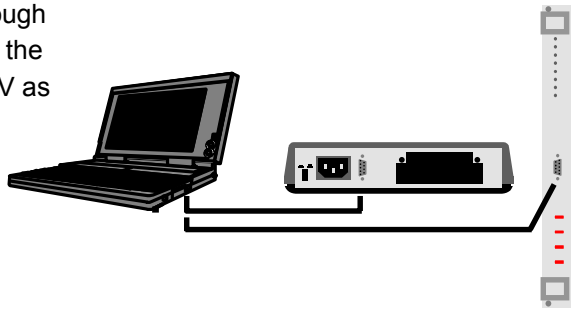
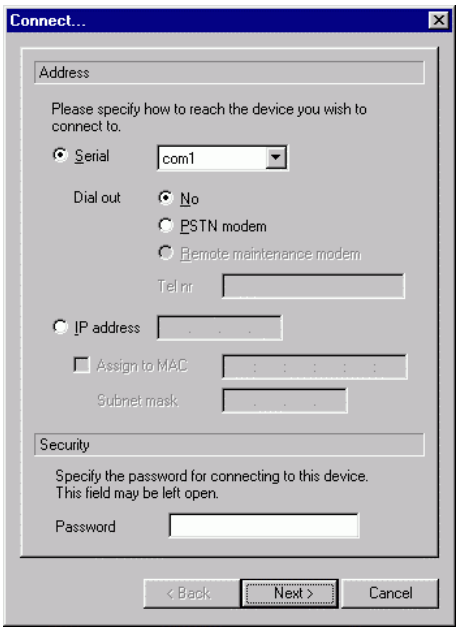
This section explains how you can connect to the Crocus CNV using TMA.

There are two ways to establish a connection with TMA to the Crocus CNV:

- over a serial connection, through the auxiliary connector of the Crocus CNV.
- over an IP or a serial connection, through the Orchid 1003 LAN

Connecting through the auxiliary connector

To establish a link between TMA and the Crocus CNV through the auxiliary connector, proceed as follows:

Step	Action
1	Connect the COM port of your PC through a straight DB9 male-female cable with the auxiliary connector of your Crocus CNV as shown in the following figure: 
2	Start TMA.
3	In the TMA window, either … • select from the menu bar: *Connect* → *Device…* • or press the shortcut key: Ctrl+N • or press on the *Connect to device* button: The *Connect (to a device)* window is being displayed as in the following figure: 
4	In the *Connect (to a device)* window, configure the following parameters: • Select the option *Serial*, and specify the COM port of your computer the Crocus CNV is connected to. • If a password has previously been configured in the Crocus CNV then also fill in the password field.
5	If the necessary parameters are filled in, press the *Next* > button.

Continued on next page

Connecting to a Crocus CNV with TMA through the auxiliary connector (continued)

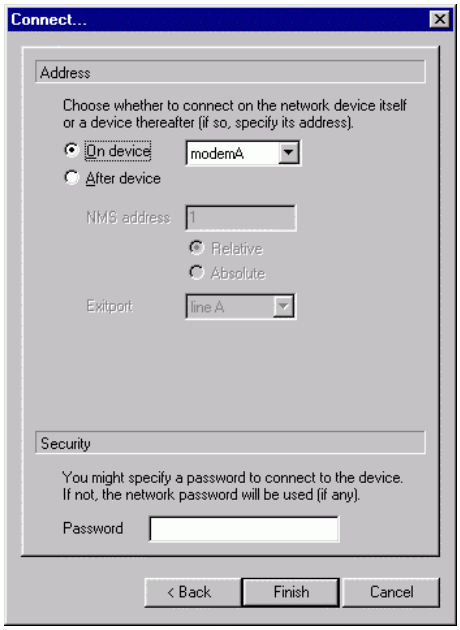
Step	Action
6	In the TMA window, either … • select from the menu bar: *Connect* → *Select device…* • or press the shortcut key: Ctrl+D • or press on the *Select device* button: The *Connect (select a device)* window is being displayed as in the following figure: 
7	Two situations can be distinguished depending on establishing a connection to a Crocus CNV TT or CV: • For a Crocus CNV TT, choose *On device*. • For a Crocus CNV CV, choose *On device* and select *modem A* or *modem B*. If a password has previously been configured in the Crocus CNV then also fill in the password field.
8	If the necessary parameters are filled in, press the *Finish* button.
9	After a couple of seconds, the attributes of the selected Crocus CNV appear in the TMA window.

Table 4.1: Connecting to a Crocus CNV with TMA through the auxiliary connector

Important remark

Suppose that both modem (converter) A and B of a Crocus CNV CV have a password. In that case, if you want to connect with TMA to converter B …

- first enter the password of converter A in the *Connect device* window (see step 3)
- then enter the password of converter B in the *Select device* window (see step 6).

Continued on next page

Connecting to a Crocus CNV with TMA (continued)

Connecting through the Orchid 1003 LAN

On central locations with many access devices, the Crocus CNV can be connected to an Orchid 1003 LAN concentrator device. In this case the Orchid 1003 LAN is a proxy device for the Crocus CNV. In that case you can connect TMA to the Crocus CNV through the Orchid 1003 LAN.

What is more, the Orchid 1003 LAN can act as an IP proxy device for the Crocus CNV. The IP address related to the Crocus CNV is defined in the Orchid 1003 LAN.

Refer to the manual of the Orchid 1003 LAN for more information on the configuration and management capabilities of this device.

4.3 Introducing the management attributes of the Crocus CNV

This section gives an introduction to the management attributes of the Crocus CNV. It introduces terms such as containment tree, group, object, attribute, value and action.

Containment tree terminology

The following figure depicts the TMA window containing the Crocus CNV containment tree.

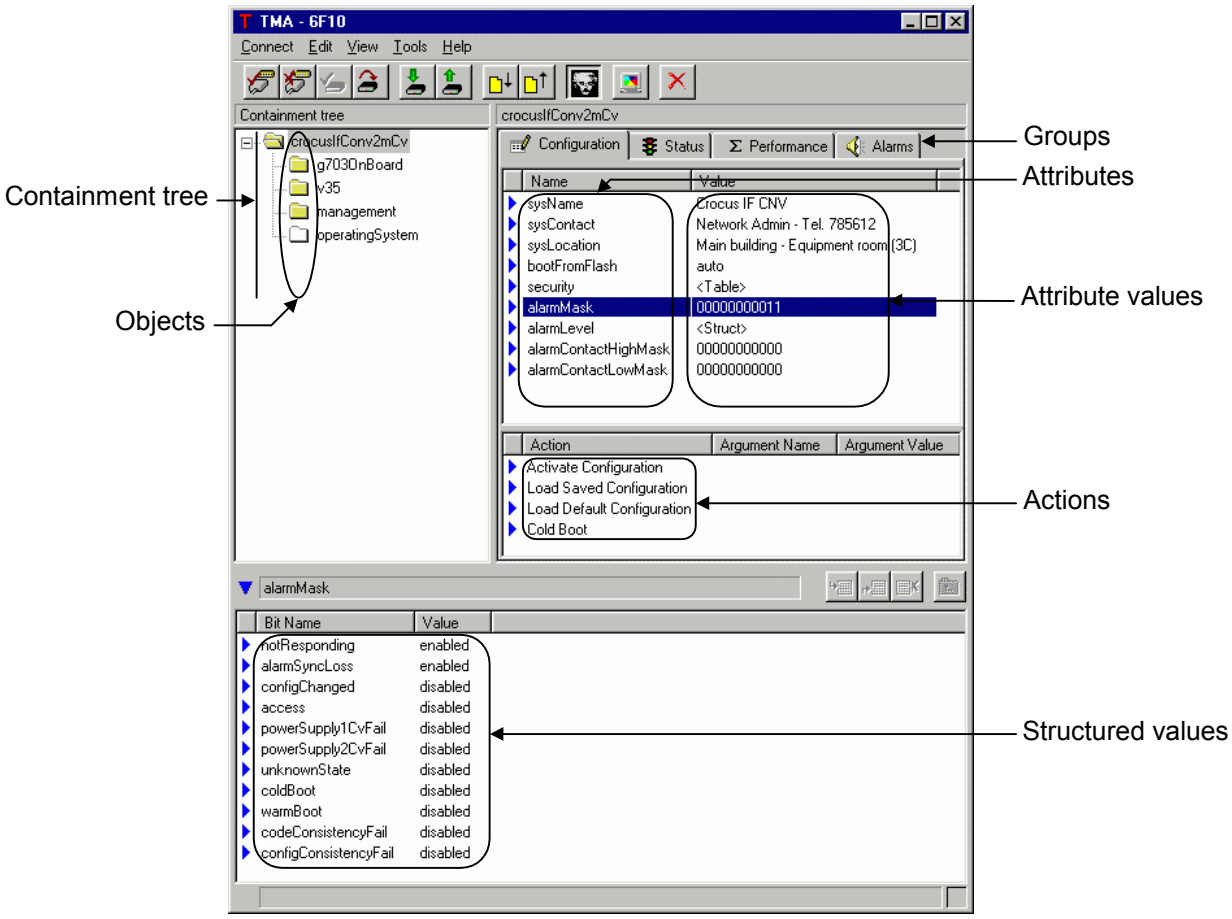


Figure 4.1: TMA window containing the Crocus CNV containment tree

Continued on next page

The following table explains the terminology associated with the containment tree.

Term	Description
containment tree	The containment tree represents the hierarchical structure of the Crocus CNV. It is composed of a number of objects that are ordered in a tree. This tree resembles a Windows® directory structure: • it is also a levelled structure, with nodes which can be expanded or reduced • the containment tree objects can be compared with file folders • the objects contain attributes like file folders contain files.
object	An object represents a physical interface, an application or a combination of both. Each object has its own set of attributes. Example: The top object crocusIfConv<2m/Nx64><Tt/Cv> contains the sub object g703OnBoard. This object contains all the attributes concerning the onboard G703 interface. E.g. the configuration attribute coding.
attribute	An attribute is a parameter related to a certain object. It has a certain value. Example: The top object crocusIfConv<2m/Nx64><Tt/Cv> contains the bootFromFlash attribute, which has the values auto, flash1 and flash2.
value	An attribute has a certain value which is … • changeable in case of a configuration attribute (provided you have write access) • read only in case of a status, performance and alarm attribute. Example: The configuration attribute bootFromFlash can be set to the value auto, flash1 and flash2.
structured value	Some attribute values contain underlying values: a structured value. These values are displayed in the structured value window. If an attribute contains structured values then a bit string, <Table> or <Struct> is displayed after the attribute. Example: The alarmLevel attribute contains a structured value which displays alarms and their corresponding priority level.
group	Groups assemble a set of attributes related by functionality. There are four groups in TMA, which correspond with the four tabs in the attribute window: • configuration • status • performance • alarms.
action	A group in combination with an object may have actions assigned to them. These actions are displayed in the action window. Example: The Cold Boot action only appears when the top object crocusIfConv<2m/Nx64><Tt/Cv> is selected in combination with the group Configuration.

Table 4.2: Containment tree terminology

Continued on next page

Introducing the management attributes of the Crocus CNV (continued)

The Crocus CNV containment tree

The following table lists the different objects of the Crocus CNV containment tree.

Object	This object contains …
> crocusIfConv <2m/Nx64><Tt/Cv>	the general system attributes. It is the top object in the containment tree. E.g. the status attribute sysUpTime: 00005d 02h 53m 16s. Note that for the different models (2M or Nx64k) or versions (TT or CV) the top object name differs.
>> g703OnBoard	the attributes of the onboard G703 interface. E.g. the configuration attribute coding.
>> <dteInterface>	the attributes of the DTE interface. E.g. the configuration attributes txClk and rxClk. The name of this object depends on the type of DTE interface. E.g. v35 in case of a V35 interface, rs530 in case of a RS530 interface, …
>> management	the network management attributes. E.g. the status attribute ifSpeed.
>> operatingSystem	the operating system attributes. E.g. the performance attribute currUsedProcPower (%).

Table 4.3: Objects of the Crocus CNV containment tree

Continued on next page

Introducing the management attributes of the Crocus CNV (continued)

Where can you find an overview of all the attributes?

The reference part of this manual explains all the attributes of the Crocus CNV. One chapter describes one group of attributes:

- chapter 6 describes the configuration attributes
- chapter 7 describes the status attributes
- chapter 8 describes the performance attributes
- chapter 9 describes the alarm attributes.

Within a chapter, the objects and their underlying attributes are discussed in a sequential manner. I.e. from top to bottom, as they appear in the attribute window.

5. Step-by-step configuration

This chapter describes in a step-by-step method how to perform a basic configuration on Crocus CNV. It also explains how DIP switch configuration tables and TMA attribute strings should be interpreted.

You are advised to read this chapter in a sequential manner, from the beginning to the end, without skipping any part. By doing so, your Crocus CNV will be completely configured and ready for use when you reach the end of this chapter.

The following table gives an overview of this chapter.

Section	Title	Page
5.1	Reading the configuration settings	50
5.2	Loading the default configuration	52
5.3	Configuring the clocking mode	55
5.4	Configuring the onboard G703 interface	62
5.5	Configuring the interface specific attributes	64
5.6	Activating the configuration	67

For a complete overview of the attributes of the Crocus CNV, refer to the reference manual.

5.1 Reading the configuration settings

As this chapter explains the basic configuration of the Crocus CNV, it contains some DIP switch configuration tables and a lot of TMA attribute strings. To enable you to read this information in a correct manner, this section explains the structure of such tables and strings.

DIP switch configuration table

A DIP switch configuration table has the following layout:

DIP switch name	DS2 no.	Setting	Function
start-up mode	1	**on**	Start up from flash memory.
		off	Start up in boot mode.

1 **2** **3** **4** **5**

Figure 5.1: DIP switch configuration table layout

The following table explains the DIP switch configuration table layout.

Number	This position displays …
1	the DIP switch icon. It indicates that the table which follows is a DIP switch configuration table.
2	the DIP switch name.
3	the DIP switch position on the DIP switch bank. The abbreviations mean the following: DS2 no. 2: DIP switch bank number 2, switch position number 2
4	the possible settings of the DIP switch: on and off. The default setting is printed in **bold**.
5	the function associated with the corresponding DIP switch setting.

Table 5.1: Information in the DIP switch configuration table

Continued on next page

Reading the configuration settings (continued)

TMA attribute string

A TMA attribute string has the following layout:

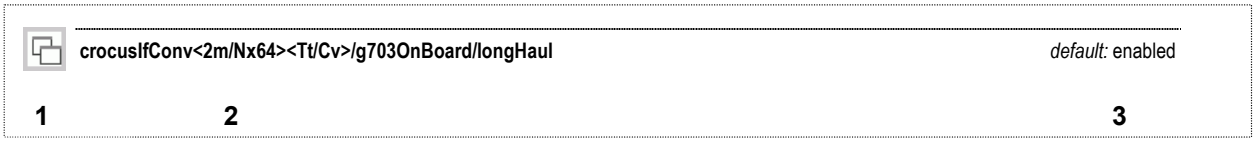


Figure 5.2: TMA attribute string layout

The following table explains the TMA attribute string layout.

Number	This position displays …
1	the TMA attribute icon. It indicates that the string which follows is a TMA attribute string. Two different TMA attribute icons exist: • a basic attribute icon • an advanced attribute icon. For more information refer to Preface – Conventions used in this manual.
2	the attribute name and its position in the containment tree. In the figure above, the string **crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/longHaul** means the following: • the attribute name is longHaul • this attribute is located in the sub object g703OnBoard • this sub object is located in the top object crocusIfConv<2m/Nx64><Tt/Cv>.
3	the default value of a configuration attribute.

Table 5.2: Information in the TMA attribute string

5.2 Loading the default configuration

If you install the Crocus CNV for the first time, all configuration attributes are set to their default value. If the Crocus CNV has already been configured a number of times and you want to reconfigure it starting from scratch, it might be best to load the default configuration.

Also, when you accidentally made a configuration error which, for some reason, makes the Crocus CNV inaccessible for TMA, you can load the default configuration using the appropriate DIP switch. For instance: you defined a password in the Crocus CNV but you can not remember it. In that case you can not access the Crocus CNV with TMA if you do not supply the correct password.

You can load the default configuration by means of …	**For more information, refer to Section …**
a DIP switch.	5.2.1 - The load default configuration DIP switch
an action in TMA.	5.2.2 - The Load Default Configuration action in TMA

5.2.1 The load default configuration DIP switch

The location of the load default configuration DIP switch is:

DIP switch name	DS5 no.	Setting	Function
load default configuration	1 (CV-A) 2 (CV-B & TT)	**on**	Normal operation.
		off	Load default configuration.

To load the default configuration using the appropriate DIP switch, proceed as follows:

Step	Action
1	In case of a … • TT, open the housing as described in Section 3.1.4 - Changing DIP switch and strap settings of the Table Top. • CV, remove the card from the CN4 card nest as described in Section 3.2.5 - Changing DIP switch and strap settings of the Card Version.
2	In case of a … • TT, set DIP switch bank DS5 position 2 to *off*. To locate this DIP switch bank, refer to Section 3.1.1 - Location of the DIP switches and straps on the Table Top. • CV, set DIP switch bank DS5 position 1 (for converter A) and / or 2 (for converter B) to *off*. To locate this DIP switch bank, refer to Section 3.2.1 - Location of the DIP switches on the Card Version.
3	In case of a … • TT, close the housing without fastening the screws. • CV, insert the card in the CN4 card nest without fastening the screws. ⇒ The Crocus CNV reboots and loads the default configuration.
4	Activate the loaded default configuration: 1. Open a TMA session on the Crocus CNV (refer to Section 4.2 - Connecting to a Crocus CNV with TMA). (*) 2. Execute the Activate Configuration command. (*) If you are performing this load default configuration procedure because you accidentally made a configuration error, you have the possibility to retrieve this erroneous configuration before executing the Activate Configuration command. In that case you do not have to reconfigure the complete device again, but you only have to correct the error in question. Retrieve the erroneous configuration by executing the Load saved configuration command.
5	Reset the corresponding DIP switch to *on*. Refer to step 2.
6	In case of a … • TT, close the housing. • CV, insert the card in the CN4 card nest. ⇒ The Crocus CNV reboots in normal operation mode.

5.2.2 The Load Default Configuration action in TMA

The location of the Load Default Configuration action in the Crocus CNV containment tree is:

crocusIfConv<2m/Nx64><Tt/Cv>/Load Default Configuration

To load the default configuration, proceed as follows:

Step	Action
1	In the TMA window, select the top object crocusIfConv<2m/Nx64><Tt/Cv> and the group Configuration.
2	In the action window of TMA, click the left mouse button on Load Default Configuration so that this action is selected.
3	Press the right mouse button and select *Execute*.
4	To see the default configuration, press the *Retrieve all attributes from device* button .
5	In the action window of TMA, click the left mouse button on Activate Configuration so that this action is selected.
6	Press the right mouse button and select *Execute*.

5.3 Configuring the clocking mode

This section explains how to configure the clocking mode on the Crocus CNV. The following table gives an overview of this section.

Section	Title	Page
5.3.1	The clocking attributes in TMA	56
5.3.2	The different clocking modes	57
5.3.3	The presence of the external clock signal	58
5.3.4	Schematic overview of the different clocking modes	59
5.3.5	Special points of interest concerning clocking on the X21 interface	61

5.3.1 The clocking attributes in TMA

Use the following two attributes to select a clocking mode.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/txClk *default:* <interface dependent>

Use this attribute to select the clocking mode of the DTE interface its transmit clock.

The following table gives an overview of the different clocking modes. It also indicates which clocking modes are supported on which DTE interfaces.

Tx clock mode	DTE interface					
	V35	**V36**	**RS530**	**X21**	**Bridge**	**Router**
internalPreferred	X	X	X	X		
internalAlternative	X	X	X	X	X	X
slaveRcvPreferred	**X**	**X**	**X**	**X**		
slaveRcvAlternative	X	X	X	X	**X**	**X**
external	X	X	X	X		

The default clocking mode is indicated in **bold**.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/rxClk *default:* fromLine

Use this attribute to select the clocking mode of the DTE interface its receive clock. The two possibilities are:

Rx clock mode	Description
fromLine	The receive clock of the DTE interface is taken from the G703 line.
slaveTransmit	The receive clock of the DTE interface is taken from the application connected to the DTE interface.

5.3.2 The different clocking modes

This section explains the different clocking modes. The following table gives an overview:

Clocking mode	Description
internal	The Crocus CNV generates the transmit clock signal and sends it to the application via the TxClk circuit (circuit 114). Internal clocking can be selected in combination with preferred or alternative clocking. See below.
slave receive	The transmit clock signal is derived from the received line data. This reconstructed clock signal is sent to the application via the TxClk circuit (circuit 114). Slave receive clocking can be selected in combination with preferred or alternative clocking. See below.
external	The application generates the transmit clock signal and sends it to the Crocus CNV via the ExtTxClk circuit (circuit 113).

Internal and slave receive clocking can be selected in combination with preferred or alternative clocking:

Clocking mode	Description
preferred	The application loops back the output of the TxClk circuit (circuit 114) to the ExtTxClk circuit (circuit 113). This guarantees an optimal phase relationship between the transmitted data and the transmitted clock. This because the transmission delays of the TxD circuit (circuit 103) and the ExtTxClk circuit are exactly the same, since the outputs of both circuits originate in the application and are fed into the Crocus CNV.
alternative	This does not require the TxClk (circuit 114) to ExtTxClk (circuit 113) loop-back. In this case the clock is looped back within the Crocus CNV itself.

It may be necessary to use preferred clocking when delays are introduced in the communication between the DTE and the Crocus CNV. Delays may occur in case of long interconnection cables.

5.3.3 The presence of the external clock signal

The presence or absence of an external clock signal may influence the clocking mode that is actually chosen by the Crocus CNV. This section explains how.

All interfaces supporting the external clock signal, regularly check the presence of this external clock signal. The following table clarifies what happens when no external clock signal is present or when it is lost:

If the Crocus CNV is configured in …	**and if the external clock signal is not present or if it is lost,**
a preferred clocking mode,	then the Crocus CNV automatically switches to alternative clocking mode. If at a certain moment the external clock signal (re)appears, the Crocus CNV switches (back) to the preferred clocking mode.
external clocking mode,	then the Crocus CNV automatically switches to internal alternative clocking mode. If at a certain moment the external clock signal (re)appears, the Crocus CNV switches (back) to external clocking mode.

5.3.4 Schematic overview of the different clocking modes

The following figures give a schematic overview of all the clocking possibilities:

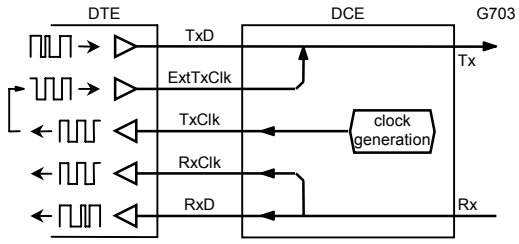


Figure 5.3: internalPreferred / fromLine clocking

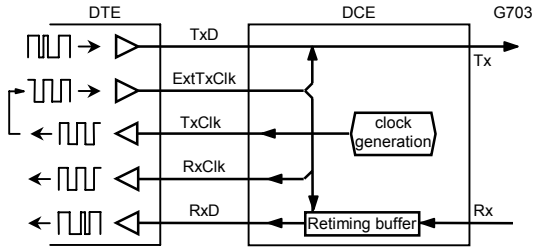


Figure 5.4: internalPreferred / slaveTransmit clocking for other interfaces

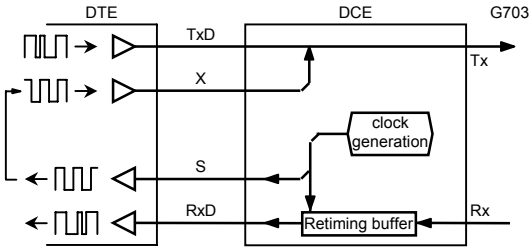


Figure 5.5: internalPreferred / slaveTransmit clocking for X21 interfaces

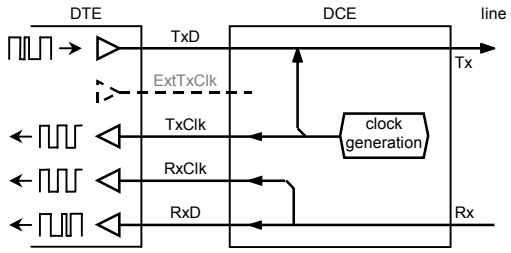


Figure 5.6: internalAlternative / fromLine clocking

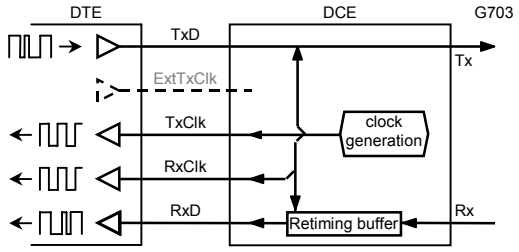


Figure 5.7: internalAlternative / slaveTransmit clocking for other interfaces

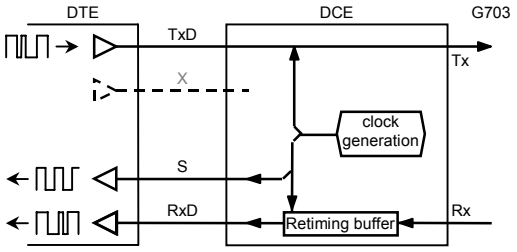


Figure 5.8: internalAlternative / slaveTransmit clocking for X21 interfaces

Continued on next page

Schematic overview of the different clocking modes (continued)

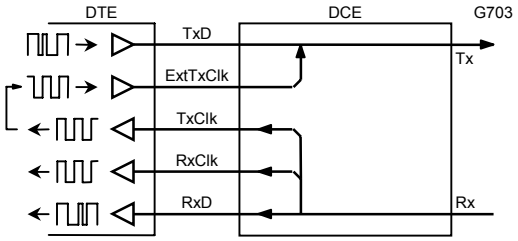


Figure 5.9: slaveRcvPreferred / <any value> clocking

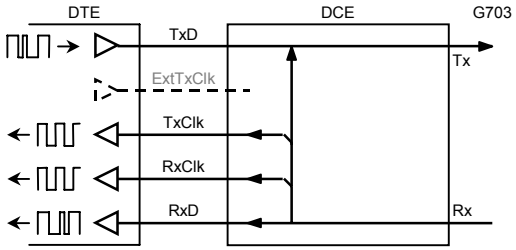


Figure 5.10: slaveRcvAlternative / <any value> clocking

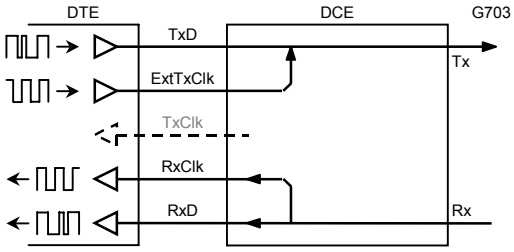


Figure 5.11: external / fromLine clocking

5.3.5 Special points of interest concerning clocking on the X21 interface

The following are some special points of interest concerning clocking on the X21 interface:

- In internal clocking modes, the S clock is the transmit clock. There is always a retiming buffer in the receive direction (slave transmit), independent of the rxClk attribute value. The receive data is clocked out with the internal clock.
- In slave receive clocking modes, the transmit and receive clocks are the same. Hence, there is no difference with other interfaces.
- In external clocking mode, the S clock is the receive clock.
- It is possible to invert the transmit sample clock on the X21 interfaces. In case of alternative clocking modes, inversion solves the *possible* problem of too long delays on the transmit data (from DTE to DCE) in comparison to the transmit clock (from DCE to DTE). The inversion can be done by means of DIP switches (refer to Section 3.2.3 - DIP switches of the Card Version).

5.4 Configuring the onboard G703 interface

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/coding *default:* HDB3

Use the coding attribute to set the G703 interface encoding mode. Two encoding modes are available:

Value	Description
AMI	Alternate Mark Inversion is a bipolar code with no zero substitution.
HDB3	High Density Bipolar 3 is a modified bipolar code. With HDB3 encoding, more than three consecutive zeroes occurring in the data are replaced by a substitution word. This to ensure a high pulse density. Therefore, data links using the HDB3 code can carry data patterns with a low 1 density. Most of the G703 applications use HDB3 encoding.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/longHaul *default:* enabled

The onboard G703 interface is equipped with a driver. This enables you to cover long distances. The driver can be enabled or disabled.

The distances that can be covered are in the order of:

- 2.5 km using a cable with a diameter of 0.6 mm
- 1.25 km using a cable with a diameter of 0.4 mm.

Important remark

On a Crocus 2M CNV CV and on a Crocus Nx64 CNV CV in unframed mode, it is not possible to start an RDL test or receive a DL test from the remote side when the device is strapped in short haul (i.e. longHaul = disabled). However, it is possible to start a DL test directly on the device itself.

Continued on next page

Configuring the onboard G703 interface (continued)

crocusIfConvNx64<Tt/Cv>/g703OnBoard/crc4Insertion *default:* enabled

This attribute is only present on the Crocus Nx64 CNV.

Use the crc4Insertion attribute to enable or disable the cyclic redundancy check (CRC). If you enable this attribute, a CRC is inserted in time slot 0 of the G.704 framed data stream. This CRC is used to check the data integrity on the G.703 connection.

crocusIfConvNx64<Tt/Cv>/g703OnBoard/timeSlots *default:* 00000000000000000000000000000001

This attribute is only present on the Crocus Nx64 CNV.

Use the timeSlots attribute to …

- set the G703 interface to unframed or framed mode.
- allocate time slots in case the G703 interface is in framed mode.

Unframed and framed mode

The following table explains the difference between unframed and framed mode.

Mode	Description
unframed (transparent)	In unframed mode, a 2 Mbps data stream is sent transparently over the line.
framed (G.704 framing)	In framed mode, up to 31 time slots each containing a 64 kbps data stream can be sent over the line. Each 64 kbps time slot can be enabled or disabled. Time slot 0 is reserved for synchronisation and signalling.

Selecting unframed mode

Select unframed mode by setting time slot TS0 to 1 (enabled). The value of the time slots TS1 up to TS31 is irrelevant.

Selecting framed mode and allocating time slots

Select framed mode and allocate time slots as follows:

1. Set time slot TS0 to 0 (disabled) to enable G.704 framing.
2. Allocate the desired time slots by setting them to value 1 (enabled).

5.5 Configuring the interface specific attributes

This section explains the most important interface specific attributes. The following table gives an overview of this section:

Section	Title	Page
5.5.1	Configuring the RTS control (RS530, V35, V36)	65
5.5.2	Configuring the LAN filter (Bridge)	66

5.5.1 Configuring the RTS control (RS530, V35, V36)

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/rtsControl *default:* external

Use the rtsControl attribute to define which device will activate the RTS signal.

Normal operation requires the RTS signal (circuit 105) to be active before the Crocus CNV activates its data transfer state, as indicated by the CTS signal (circuit 106). Therefore, make sure the RTS signal is activated either by the application or by the Crocus CNV.

If RTS control is set to …	the RTS signal is activated by …	Use this setting in case …
external	the application.	the application has to be in command of the RTS signal.
internal	the Crocus CNV.	the application is not able to activate the RTS signal.

5.5.2 Configuring the LAN filter (Bridge)

crocusIfConv<2m/Nx64><Tt/Cv>/bridge/lanFilter *default:* enabled

Use the lanFilter attribute to enable or disable the filter functionality of the bridge. The lanFilter attribute can be set to:

Value	Description
enabled	The bridge acts as a filter. Refer to Figure 5.12: Bridge functionality. Data coming from network 1, will only be let through by the bridge if this data has a destination address outside network 1 or a multicast or broadcast address. The bridge filters the data and decreases the traffic on the serial line.
disabled	The bridge acts as a repeater. Refer to Figure 5.12: Bridge functionality. All the data which originates from network 1 will be let through to network 2. Even if the data is not destined for that network.

The following figure depicts a bridge set-up:

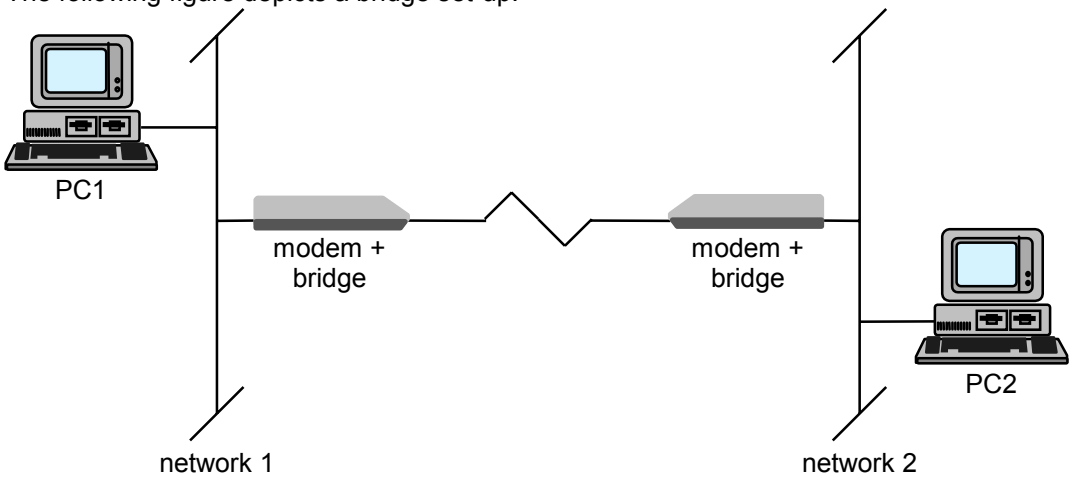


Figure 5.12: Bridge functionality

5.6 Activating the configuration

Once the basic configuration of the Crocus CNV is made, it has to be activated. Do this by pressing the *Send all attributes to device* button in TMA:

If you experience problems of any kind, you can always consult the status, performance and alarm attributes in order to determine the problem. For more information on these attributes, refer to the reference manual.

Reference manual

6. Configuration attributes

This chapter discusses the configuration attributes of the Crocus CNV. The following table gives an overview of this chapter.

Section	Title	Page
6.1	Configuration attribute overview	71
6.2	General configuration attributes	72
6.3	G703 onboard configuration attributes	79
6.4	Interface configuration attributes	82
6.5	Management configuration attributes	86

6.1 Configuration attribute overview

> crocusIfConv<2m/Nx64><Tt/Cv>

- sysName
- sysContact
- sysLocation
- bootFromFlash
- security
- alarmMask
- alarmLevel
- alarmContactHighMask (1)
- alarmContactLowMask (1)
- Action: Activate Configuration
- Action: Load Saved Configuration
- Action: Load Default Configuration
- Action: Cold Boot

(1) CV only

>> g703OnBoard

- coding
- tests
- alarmMask
- alarmLevel
- alarmContactHighMask (1)
- alarmContactLowMask (1)
- longHaul
- crc4Insertion (2)
- timeSlots (2)

(2) only present on the Crocus Nx64 CNV

>> rs530, v35, v36 (3)

- rtsControl
- ctsDelay
- tests
- alarmMask
- alarmLevel
- alarmContactHighMask (1)
- alarmContactLowMask (1)
- txClk
- rxClk

Continued in next column

(continued)

>> x21 (3)

- alarmMask
- alarmLevel
- alarmContactHighMask (1)
- alarmContactLowMask (1)
- txClk
- rxClk

>> bridge (3)

- lanFilter
- alarmMask
- alarmLevel
- alarmContactHighMask (1)
- alarmContactLowMask (1)
- txClk
- rxClk

>> router (3)

- alarmMask
- alarmLevel
- alarmContactHighMask (1)
- alarmContactLowMask (1)
- txClk
- rxClk

(3) only present when the corresponding interface is used

>> management

- cms2Address
- consoleNoTrafficTimeout
- ctrlPortProtocol (4)

(4) TT only

6.2 General configuration attributes

crocusIfConv<2m/Nx64><Tt/Cv>/sysName *default:* <empty>

This is a field where you can assign a name to the Crocus CNV. The field has a limit of 64 characters.

This is a SNMP MIB2 parameter.

crocusIfConv<2m/Nx64><Tt/Cv>/sysContact *default:* <empty>

This is a field where you can fill in the name of a contact person together with information on how to contact this person. The field has a limit of 64 characters.

This is a SNMP MIB2 parameter.

crocusIfConv<2m/Nx64><Tt/Cv>/sysLocation *default:* <empty>

This is a field where you can fill in the physical location of the Crocus CNV. The field has a limit of 64 characters.

This is a SNMP MIB2 parameter.

crocusIfConv<2m/Nx64><Tt/Cv>/bootFromFlash *default:* auto

The Crocus CNV has two flash memory banks. Each flash memory can contain a complete software version, but only one can be active. You can choose from the following settings:

Value	If you boot the Crocus CNV then …
flash1	the first flash memory bank is activated.
flash2	the second flash memory bank is activated.
auto	the Crocus CNV automatically chooses the flash memory bank containing the most recent firmware, by comparing the firmware version numbers.

For a Crocus CNV CV, the bootFromFlash attribute only works on converter A. Although the bootFromFlash attribute is also visible in the containment tree of converter B, its setting is ignored. Both converter A and B use the same firmware.

Continued on next page

General configuration attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/security *default:* <empty>

In order to avoid unauthorised access to the network and the Crocus CNV, you can create a list of passwords with associated access levels. The security attribute contains the following elements:

Element	Description	Default value
password	The password is a string of maximum 10 characters.	<empty>
accessRights	This attribute represents the access levels assigned to a password. It is a bit string whereof each bit corresponds to an access level. The table below describes the different access levels.	111

Element	Description	
ReadAccess	A password that includes this access level allows you to *read all attributes*, except security attributes.	on
WriteAccess	A password that includes this access level allows you to *change all attributes*, except security attributes. Moreover, the security attributes cannot be read.	on
SecurityAccess	A password that includes this access level allows you to *read and change security attributes*. The Crocus CNV has the following security attributes: • crocusIfConv<2m/Nx64><Tt/Cv>/security	on

If no passwords are created, everybody has complete access.

If you define at least one password, it is impossible to access the Crocus CNV with TMA if you do not enter the correct password.

If you create a list of passwords, you should create at least one with write and security access. If not, you will be unable to make configuration and password changes after activation of the new configuration.

Continued on next page

crocusIfConv<2m/Nx64><Tt/Cv>/security (continued)

Correcting the security table

If you forgot your password or you forgot to create one with write and security access, then you can set the *Load Default Configuration* DIP switch. As a result, the Crocus CNV reboots in its default configuration. You can then retrieve the erroneous configuration and correct it.

To correct the security table, proceed as follows:

Step	Action
1	Remove the Crocus CNV from the CN4 card nest as described in Section 3.2.5 - Changing DIP switch and strap settings of the Card Version.
2	Set DIP switch bank DS5 position 1 (for converter A) and / or 2 (for converter B) to *off*. To locate this DIP switch bank, refer to Section 3.2.1 - Location of the DIP switches on the Card Version.
3	Re-insert the Crocus CNV in the CN4 card nest. ⇒ The Crocus CNV reboots and loads the default configuration.
4	Retrieve the erroneous configuration: 1. Open a TMA session on the Crocus CNV (refer to Section 4.2 - Connecting to a Crocus CNV with TMA). 2. Execute the Load saved configuration command. 3. Correct the error in the security table. 4. Execute the Activate Configuration command.
5	Reset DIP switch bank DS5 position 1 (for converter A) and / or 2 (for converter B) to *on*.
6	Re-insert the Crocus CNV in the CN4 card nest as described in Section 3.2.5 - Changing DIP switch and strap settings of the Card Version. ⇒ The Crocus CNV reboots in normal operation mode.

Table 6.1: Correcting the security table

Continued on next page

General configuration attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/alarmMask

The alarmMask attribute enables or disables for each alarm of the corresponding object, whether it is communicated to the central management system (e.g. HP OpenView®) or not.

For more information on …

- alarms in general, refer to Section 9.2 - Introduction to the alarm attributes.
- the alarms of the crocusIfConv<2m/Nx64><Tt/Cv> object, refer to Section 9.3 - General alarms.

crocusIfConv<2m/Nx64><Tt/Cv>/alarmLevel

With this attribute, a priority level can be assigned to each alarm of the corresponding object. The alarm level ranges from 0 up to 254, where 0 is the lowest and 254 is the highest priority level.

crocusIfConv<2m/Nx64>Cv/alarmContactHighMask

This attribute is only present on the CV.

The alarmContactHighMask attribute enables or disables for each alarm of the corresponding object, whether:

- a visual indication is generated (blinking error LED)
- the alarm contacts on the CN4 card nest are driven.

crocusIfConv<2m/Nx64>Cv/alarmContactLowMask

This attribute is only present on the CV.

The alarmContactLowMask attribute enables or disables for each alarm of the corresponding object, whether:

- a visual indication is generated (blinking error LED)
- the alarm contacts on the CN4 card nest are driven.

Continued on next page

General configuration attributes (continued)

Configuration actions

Three types of configuration are present in the Crocus CNV:

- the non-active configuration
- the active configuration
- the default configuration.

When configuring the Crocus CNV with TMA, as in *Chapter 5 - Step-by-step configuration*, the following happens:

Phase	Action	Result
1	The computer running TMA is connected to the Crocus CNV.	The non-active configuration is displayed on the screen.
2	Modifications are made on the non-active configuration.	These modifications have no immediate influence on the active configuration currently used by the Crocus CNV.
3	All necessary modifications are carried out on the non-active configuration.	Now, the non-active configuration has to be made active.
4	Execute the Activate Configuration action.	The non-active configuration becomes the active configuration.

Table 6.2: The non-active, active and default configuration

crocusIfConv<2m/Nx64><Tt/Cv>/Activate Configuration

If you execute this action, the editable non-active configuration becomes the active configuration.

To activate a configuration, proceed as follows:

Step	Action
1	In the TMA window, select the top object crocusIfConv<2m/Nx64><Tt/Cv> and the group Configuration.
2	In the action window of TMA, click the left mouse button on Activate Configuration so that this action is selected.
3	Press the right mouse button and select *Execute*.

Table 6.3: Activating a configuration

The Activate Configuration action can also be performed with the *Send all attributes to device* button: .

Continued on next page

General configuration attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/Load Saved Configuration

If you are in the progress of modifying the non-active configuration but made some mistakes, you might want to revert to the active configuration. If you execute the Load Saved Configuration action, the non-active configuration is overwritten by the active configuration currently used by the Crocus CNV.

To reload the active configuration, proceed as follows:

Step	Action
1	In the TMA window, select the top object crocusIfConv<2m/Nx64><Tt/Cv> and the group Configuration.
2	In the action window of TMA, click the left mouse button on Load Saved Configuration so that this action is selected.
3	Press the right mouse button and select *Execute*.
4	To see the active configuration, press the *Retrieve all attributes from device* button: .

Table 6.4: Loading the active configuration

crocusIfConv<2m/Nx64><Tt/Cv>/Load Default Configuration

If you install the Crocus CNV for the first time, all configuration attributes are set to their default value. If the Crocus CNV has already been configured a number of times and you want to reconfigure it starting from scratch, you can load the default configuration.

To load the default configuration, proceed as follows:

Step	Action
1	In the TMA window, select the top object crocusIfConv<2m/Nx64><Tt/Cv> and the group Configuration.
2	In the action window of TMA, click the left mouse button on Load Default Configuration so that this action is selected.
3	Press the right mouse button and select *Execute*.
4	To see the default configuration, press the *Retrieve all attributes from device* button .
5	In the action window of TMA, click the left mouse button on Activate Configuration so that this action is selected.
6	Press the right mouse button and select *Execute*.

Table 6.5: Loading the default configuration

Continued on next page

General configuration attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/Cold Boot

This action will reboot the Crocus CNV while the power stays up (the Crocus CNV also reboots if it is powered down and up again).

This implies that:

- it checks which firmware to use
- it reads the saved configuration and restarts program execution.

You can use this action, for instance, to activate new firmware.

To perform a cold boot, proceed as follows:

Step	Action
1	In the TMA window, select the top object crocusIfConv<2m/Nx64><Tt/Cv> and the group Configuration, Status, Performance or Alarms.
2	In the action window of TMA, click the left mouse button on Cold Boot so that this action is selected.
3	Press the right mouse button and select *Execute*. ⇒ The session between TMA and the Crocus CNV is interrupted.
4	Re-establish a TMA session on the Crocus CNV. ⇒ The Crocus CNV attributes reappear on your screen.

Table 6.6: Performing a cold boot

If a Cold Boot is performed on a Crocus CNV CV, both converter A and B reboot.

6.3 G703 onboard configuration attributes

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/coding *default:* HDB3

Use the coding attribute to set the G703 interface encoding mode. Two encoding modes are available:

Value	Description
AMI	Alternate Mark Inversion is a bipolar code with no zero substitution.
HDB3	High Density Bipolar 3 is a modified bipolar code. With HDB3 encoding, more than three consecutive zeroes occurring in the data are replaced by a substitution word. This to ensure a high pulse density. Therefore, data links using the HDB3 code can carry data patterns with a low 1 density. Most of the G703 applications use HDB3 encoding.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/tests

Use the tests attribute to enable or disable detection of an RDL test and to set its duration:

Element	Description	Default value
rdlDetect	When set to disabled, this attribute prevents that a digital loop can be performed by a remote Crocus CNV on the local Crocus CNV. When rdlDetect is disabled, and a remote Crocus CNV initiates an RDL test, the local Crocus CNV will not go in digital loop. However, the DTE interface of the remote Crocus CNV will be clamped and data transfer is interrupted.	enabled
testDuration	Some tests cause an interruption of the normal data transfer. Therefore, all tests are automatically terminated after a time-out period which is specified with the testDuration attribute. The time-out ranges from 00h 00m 01s up to 18h 12m 15s. Entering 00h 00m 00s disables the time-out period.	03m 00s

Continued on next page

G703 onboard configuration attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/alarmMask

The alarmMask attribute enables or disables for each alarm of the corresponding object, whether it is communicated to the central management system (e.g. HP OpenView®) or not.

For more information on …

- alarms in general, refer to Section 9.2 - Introduction to the alarm attributes.
- the alarms of the g703OnBoard object, refer to Section 9.4 - G703 onboard alarms.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/alarmLevel

With this attribute, a priority level can be assigned to each alarm of the corresponding object. The alarm level ranges from 0 up to 254, where 0 is the lowest and 254 is the highest priority level.

crocusIfConv<2m/Nx64>Cv/g703OnBoard/alarmContactHighMask

This attribute is only present on the CV.

The alarmContactHighMask attribute enables or disables for each alarm of the corresponding object, whether:

- a visual indication is generated (blinking error LED)
- the alarm contacts on the CN4 card nest are driven.

crocusIfConv<2m/Nx64>Cv/g703OnBoard/alarmContactLowMask

This attribute is only present on the CV.

The alarmContactLowMask attribute enables or disables for each alarm of the corresponding object, whether:

- a visual indication is generated (blinking error LED)
- the alarm contacts on the CN4 card nest are driven.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/longHaul *default:* enabled

The onboard G703 interface is equipped with a driver. This enables you to cover long distances. The driver can be enabled or disabled.

The distances that can be covered are in the order of:

- 2.5 km using a cable with a diameter of 0.6 mm
- 1.25 km using a cable with a diameter of 0.4 mm.

Important remark

On a Crocus 2M CNV CV and on a Crocus Nx64 CNV CV in unframed mode, it is not possible to start an RDL test or receive a DL test from the remote side when the device is strapped in short haul (i.e. longHaul = disabled). However, it is possible to start a DL test directly on the device itself.

Continued on next page

G703 onboard configuration attributes (continued)

crocusIfConvNx64<Tt/Cv>/g703OnBoard/crc4Insertion *default:* enabled

This attribute is only present on the Crocus Nx64 CNV.

Use the crc4Insertion attribute to enable or disable the cyclic redundancy check (CRC). If you enable this attribute, a CRC is inserted in time slot 0 of the G.704 framed data stream. This CRC is used to check the data integrity on the G.703 connection.

crocusIfConvNx64<Tt/Cv>/g703OnBoard/timeSlots *default:* 00000000000000000000000000000001

This attribute is only present on the Crocus Nx64 CNV.

Use the timeSlots attribute to …

- set the G703 interface to unframed or framed mode.
- allocate time slots in case the G703 interface is in framed mode.

Unframed and framed mode

The following table explains the difference between unframed and framed mode.

Mode	Description
unframed (transparent)	In unframed mode, a 2 Mbps data stream is sent transparently over the line.
framed (G.704 framing)	In framed mode, up to 31 time slots each containing a 64 kbps data stream can be sent over the line. Each 64 kbps time slot can be enabled or disabled. Time slot 0 is reserved for synchronisation and signalling.

Selecting unframed mode

Select unframed mode by setting time slot TS0 to 1 (enabled). The value of the time slots TS1 up to TS31 is irrelevant.

Selecting framed mode and allocating time slots

Select framed mode and allocate time slots as follows:

1. Set time slot TS0 to 0 (disabled) to enable G.704 framing.
2. Allocate the desired time slots by setting them to value 1 (enabled).

6.4 Interface configuration attributes

This section discusses the configuration attributes of the different DTE interfaces. The following table gives an overview of this section.

Section	Title	Page
6.4.1	General interface configuration attributes	83
6.4.2	RS530, V35 and V36 interface configuration attributes	84
6.4.3	Bridge interface configuration attributes	85

Because some of the interface configuration attributes are present on every interface, they are discussed in a general section. All other sections discuss the interface specific attributes.

6.4.1 General interface configuration attributes

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/alarmMask

The alarmMask attribute enables or disables for each alarm of the corresponding object, whether it is communicated to the central management system (e.g. HP OpenView®) or not.

For more information on …

- alarms in general, refer to Section 9.2 - Introduction to the alarm attributes.
- the alarms of the <dteInterface> object, refer to Section 9.5 - Interface alarms.

Note that the underlying alarms may differ for each interface.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/alarmLevel

With this attribute, a priority level can be assigned to each alarm of the corresponding object. The alarm level ranges from 0 up to 254, where 0 is the lowest and 254 is the highest priority level.

crocusIfConv<2m/Nx64>Cv/<dteInterface>/alarmContactHighMask

This attribute is only present on the CV.

The alarmContactHighMask attribute enables or disables for each alarm of the corresponding object, whether:

- a visual indication is generated (blinking error LED)
- the alarm contacts on the CN4 card nest are driven.

crocusIfConv<2m/Nx64>Cv/<dteInterface>/alarmContactLowMask

This attribute is only present on the CV.

The alarmContactLowMask attribute enables or disables for each alarm of the corresponding object, whether:

- a visual indication is generated (blinking error LED)
- the alarm contacts on the CN4 card nest are driven.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/txClk *default:* <interface dependent>

Use this attribute to select the clocking mode of the DTE interface its transmit clock. For more information on clocking, refer to Section 5.3 - Configuring the clocking mode.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/rxClk *default:* fromLine

Use this attribute to select the clocking mode of the DTE interface its receive clock. For more information on clocking, refer to Section 5.3 - Configuring the clocking mode.

6.4.2 RS530, V35 and V36 interface configuration attributes

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/rtsControl *default:* external

Use the rtsControl attribute to define which device will activate the RTS signal.

Normal operation requires the RTS signal (circuit 105) to be active before the Crocus CNV activates its data transfer state, as indicated by the CTS signal (circuit 106). Therefore, make sure the RTS signal is activated either by the application or by the Crocus CNV.

If RTS control is set to …	the RTS signal is activated by …	Use this setting in case …
external	the application.	the application has to be in command of the RTS signal.
internal	the Crocus CNV.	the application is not able to activate the RTS signal.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/ctsDelay *default:* 0 ms

Use the ctsDelay attribute to define the delay between the active edge of the incoming RTS signal and the active edge of the outgoing CTS signal.

The delays that can be selected are: 0 ms, 4 ms, 16 ms and 64 ms.

If RTS control is set to …	then …
external	a delay is provided between: • the moment the active edge of the RTS signal comes in • the moment the active edge of the outgoing CTS signal is generated.
internal	no delay is provided. The CTS signal is always on.

Between the moment the RTS signal drops and the moment the CTS signal drops, no delay is provided.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/tests *default:* disabled

Use the tests attribute to enable or disable the interface tests.

The interface tests of the Crocus CNV are useful to trace possible problems. These interface tests are initiated by the application via the interface. If these tests are not supported by the application, it is possible that an undesired test is activated resulting in a disturbance of the data transfer. Therefore, they are disabled by default.

The available interface tests are:

- interfaceAl: interface Analogue Loop
- interfaceRdl: interface Remote Digital Loop

6.4.3 Bridge interface configuration attributes

crocusIfConv<2m/Nx64><Tt/Cv>/bridge/lanFilter *default:* enabled

Use the lanFilter attribute to enable or disable the filter functionality of the bridge. For more information, refer to Section 5.5.2 - Configuring the LAN filter (Bridge).

6.5 Management configuration attributes

crocusIfConv<2m/Nx64><Tt/Cv>/management/cms2Address *default:* 0

If you want to connect to a Crocus CNV with TMA, you have to specify the address of the Crocus CNV. Refer to Section 4.2 - Connecting to a Crocus CNV with TMA.

There are two different types of addresses:

Address type	Description
relative	This type of addressing is meant for a network topology where the devices are connected *in-line* on management level. I.e. with extended management links (1) between two devices. Refer to Figure 6.1: Relative addressing. To enable relative addressing, no address has to be specified in the device. (1) An extended management link is realised with a crossed cable between the auxiliary connectors of the two devices. You also have to set the console attribute to the value management.
absolute	This type of addressing is meant for a network topology where the devices are not connected *in-line* on management level. I.e. when there is a digital multipoint device present (e.g. the Orchid DM). Refer to Figure 6.2: Absolute addressing. To enable absolute addressing, an address has to be specified in the device. This is done with the attribute cms2Address. The absolute addressing range goes from 0 up to 65535.

Table 6.7: Relative and absolute addressing

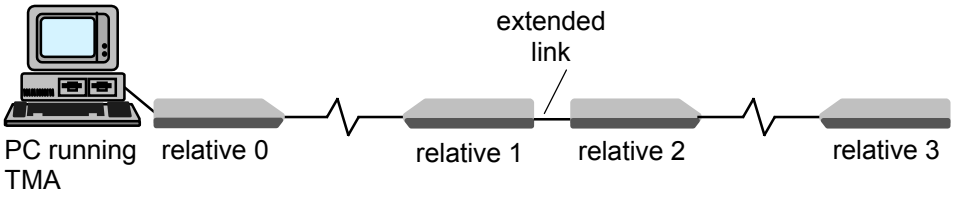


Figure 6.1: Relative addressing

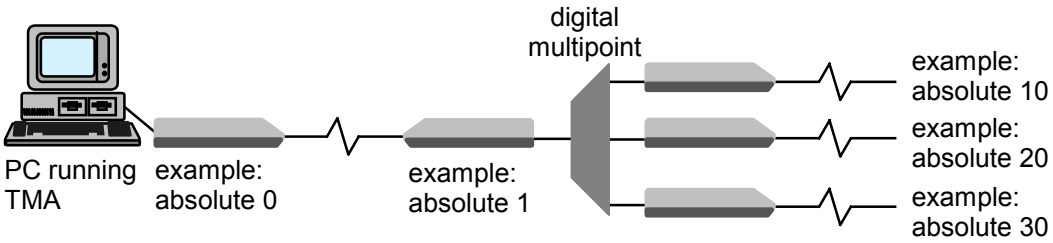


Figure 6.2: Absolute addressing

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Management configuration attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/management/consoleNoTrafficTimeout *default:* 30m 00s

You can open a TMA session on the Crocus CNV through the auxiliary connector. These sessions close automatically if there is no user interaction during a certain time-out period. This time-out period can be set with the consoleNoTrafficTimeOut attribute.

The purpose of such a timer is to protect the Crocus CNV against unauthorised access in case the last user did not close his session.

The consoleNoTrafficTimeOut value ranges from 00000d 00h 00m 00s up to 24855d 03h 14m 07s.

crocusIfConv<2m/Nx64><Tt/Cv>/management/ctrlPortProtocol *default:* console

The setting of the console attribute depends on what purpose the auxiliary connector of the Crocus CNV has to serve. This is explained in the following table:

Value	Description
management	Select this value if you want to connect the auxiliary connector of the Crocus CNV to … • the Orchid 1003 LAN for management purposes. • the auxiliary connector of another Crocus CNV using a crossed cable (i.e. they are connected back-to-back) in order to create an extended management link. For more information on extended management links, refer to Table 6.7: Relative and absolute addressing. When connecting the auxiliary connector of the Crocus CNV to a COM port of your computer, you can still open a TMA session on the Crocus CNV. You can however *not* open a CLI or ATWIN session.
console	Select this value if you want to connect the auxiliary connector of the Crocus CNV to a COM port of your computer in order to manage the Crocus CNV using TMA, CLI or ATWIN.

The console attribute is present on the Table Top only, not on the Card Version. This because the management connection between the Crocus CNV CV and the Orchid 1003 LAN happens through the high speed bus on the CN4 backplane instead of through the auxiliary connector.

This implies that the auxiliary connector of the Crocus CNV CV …

- can not be connected to:
  - the Orchid 1003 LAN for management purposes
  - the auxiliary connector of another Crocus CNV to create an extended management link.
- can be connected to a COM port of your computer in order to manage it with TMA, CLI or ATWIN.

7. Status attributes

This chapter discusses the status attributes of the Crocus CNV. The following table gives an overview of this chapter.

Section	Title	Page
7.1	Status attribute overview	89
7.2	General status attributes	91
7.3	G703 onboard status attributes	94
7.4	Interface status attributes	97
7.5	Management status attributes	103
7.6	Operating system status attributes	104

7.1 Status attribute overview

> crocusIfConv<2m/Nx64><Tt/Cv>

- sysDesc
- sysObjectID
- sysUpTime
- sysServices
- flash1Version
- flash2Version
- activeFlash
- bootVersion
- flashVersions
- messages
- deviceId
- configurationSaving

>> g703OnBoard

- testType
- testOriginator
- testStatus
- errorCount
- lineAttenuation (dB)
- ifDescr
- ifType
- txdItu103
- rxdItu104
- ifSpeed
- ifOperStatus
- ais
- los
- lfa (1)

(1) only present on the Crocus Nx64 CNV

Continued in next column

(continued)

>> rs530, v35, v36 (2)

- txdItu103
- rxdItu104
- rtsItu105
- ctsItu106
- dsrItuT107
- dcdItu109
- rdlItu140
- alItu141
- tiItu142
- ifDescr
- ifType
- ifSpeed
- ifOperStatus
- ifClockingTx
- ifClockingRx

>> x21 (2)

- txdItu103
- rxdItu104
- indicator
- ifDescr
- ifType
- ifSpeed
- ifOperStatus
- ifClockingTx
- ifClockingRx

Continued on next page

Status attribute overview (continued)

>> bridge (2)

- wanTxd
- wanRxd
- ifDescr
- ifType
- ifSpeed
- ifOperStatus
- ifClockingTx
- ifClockingRx

>> router (2)

- ifDescr
- ifType
- ifSpeed
- ifOperStatus
- ifClockingTx
- ifClockingRx

(2) only present when the corresponding interface is used

>> management

- ifSpeed
- cardNestNumber (3)
- cardSlotNumber (3)
- position (3)

(3) CV only

>> operatingSystem

- taskInfo

7.2 General status attributes

crocusIfConv<2m/Nx64><Tt/Cv>/sysDescr

This is a textual description of the device. This is an SNMP MIB2 parameter.

Example: Crocus CNV Txxxx/xxxxx 01/01/00 12:00. In this example the following parameters are visible:

- Crocus CNV is the device name
- Txxxx/xxxxx is the firmware code and version
- 01/01/00 12:00 is the firmware release date and time.

crocusIfConv<2m/Nx64><Tt/Cv>/sysObjectID

This is the SNMP identification string. This is an SNMP MIB2 parameter.

Example: 1.3.6.1.4.1.776.13.

crocusIfConv<2m/Nx64><Tt/Cv>/sysUpTime

This is the elapsed time since last power-on or cold boot of the Crocus CNV.

Example: 00005d 02h 42m 15s, which means 5 days, 2 hours, 42 minutes and 15 seconds.

crocusIfConv<2m/Nx64><Tt/Cv>/sysServices

This is the SNMP service identification. This is an SNMP MIB2 parameter.

Example: 4, which indicates that the Crocus CNV has an end-to-end functionality.

Continued on next page

General status attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/flash1Version

This displays the code and version of the firmware currently stored in flash bank 1. If this value is empty then flash bank 1 does not contain firmware.

Example: Txxxx/xxxxx 01/01/00 12:00. In this example the following parameters are visible:

- Txxxx is the firmware code for this device
- /xxxxx is the firmware version
- 01/01/00 is the firmware release date
- 12:00 is the firmware release time.

crocusIfConv<2m/Nx64><Tt/Cv>/flash2Version

This displays the code and version of the firmware currently stored in flash bank 2. If this value is empty then flash bank 2 does not contain firmware or the Crocus CNV is equipped with one flash bank only.

crocusIfConv<2m/Nx64><Tt/Cv>/activeFlash

This displays which flash bank is currently active.

crocusIfConv<2m/Nx64><Tt/Cv>/bootVersion

This displays the code and version of the boot software currently used in the Crocus CNV.

Example: Txxxx/xxxxx 01/01/00 12:00. In this example the following parameters are visible:

- Txxxx is the boot software code for this device
- /xxxxx is the boot software version
- 01/01/00 is the boot software release date
- 12:00 is the boot software release time.

crocusIfConv<2m/Nx64><Tt/Cv>/flashVersion

This attribute indicates how many flash banks are present in the Crocus CNV. Hence it indicates how many firmware versions can be stored in the Crocus CNV. The possible values are 1 and 2.

Continued on next page

General status attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/messages

This table displays informative and error messages, e.g. Reconfigured, Cold Boot, … The messages table displays maximum 20 messages.

If you do not open a TMA session over the control port, then the messages are also sent to the control port. This means that if you open a terminal emulation session on the control port, you can monitor these messages. If you hit the ENTER key, the messages stop.

crocusIfConv<2m/Nx64><Tt/Cv>/deviceId

This displays a unique code. This code is programmed into the Crocus CNV before it leaves the factory. You can use this code for inventory purposes.

crocusIfConv<2m/Nx64><Tt/Cv>/configurationSaving

This attribute indicates when the Crocus CNV is writing its (new) configuration to the flash memory.

Value	Description
busy	The Crocus CNV is busy writing its configuration to the flash memory. During this state, do not power-down or reboot the Crocus CNV else the new configuration will be lost.
done	The Crocus CNV has finished writing its configuration to the flash memory.

7.3 G703 onboard status attributes

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/testType

This attribute displays which interface test is currently active on the onboard G703 interface. The possible indications are:

Value	Description
no	No test is active.
al	An Analogue Loop is active.
dl	A Digital Loop is active.
rdl	A Remote Digital Loop is active.
et	An Error Test is active.
alEt	A combination of an Analogue Loop and an Error Test is active.
rdlEt	A combination of a Remote Digital Loop and an Error Test is active.

For more information on these tests, refer to Chapter 12 - Diagnostic tests.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/testOriginator

This attribute displays the origin of the active test. The possible indications are:

Value	Description
nms	The test is initiated by the Telindus Maintenance Application or a central management system (e.g. TMA under HP OpenView®).
keyboard	The test is initiated by means of the buttons on the front panel of the Crocus CNV.
interface	The test is initiated by the application, via the interface.
remote	The test is initiated by the remote Crocus CNV.
unknown	There are two possibilities: • No test is running. • For some reason it is not possible to define the origin of the test.

Continued on next page

G703 onboard status attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/testStatus

This attribute displays the status of the active test. The possible indications are:

Value	Description
progressing	The test is starting.
running	The test is running.
ending	The test is ending.
unknown	There are two possibilities: • No test is running. • For some reason it is not possible to retrieve the status of the test.

Normally when an RDL test is started on a local device, the testStatus changes from progressing to running after the remote device has acknowledged that the RDL test has been initiated successfully. However, because of the characteristics of the chip used in the Crocus CNV, the testStatus indicates running immediately after starting the RDL test on the local Crocus CNV. In other words, there is no guarantee that the RDL test was initiated successfully on the remote Crocus CNV.

This remark applies to the Crocus 2M CNV and the Crocus Nx64 CNV running in *unframed* mode.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/errorCount

This attribute displays the amount of detected errors since the start of an ET, AL-ET or RDL-ET test. Every time a new ET, AL-ET or RDL-ET is started, the errorCount attribute is reset to 0.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/lineAttenuation(dB)

This attribute displays the current G703 line attenuation in dB, e.g. 11.0.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/ifDescr

This attribute displays the interface description (g703OnBoard). It is an SNMP MIB2 parameter.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/ifType

This attribute displays the interface type (other). It is an SNMP MIB2 parameter.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/txdItu103

This attribute displays the status (on / off) of the transmit data signal (circuit 103). The txdItu103 attribute only indicates the presence of the TxD signal, it does not monitor the real data signal.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/rxdItu104

This attribute displays the status (on / off) of the receive data signal (circuit 104). The rxdItu104 attribute only indicates the presence of the RxD signal, it does not monitor the real data signal.

Continued on next page

G703 onboard status attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/ifSpeed

This attribute displays the current interface speed in bits per second (bps), e.g. 640000. When the interface is down (ifOperStatus = down), the interface speed is 0.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/ifOperStatus

This attribute displays the current operational status of the interface. The possible indications are:

Value	Description
up	The interface is up, data transfer is possible. In other words, there is a valid connection.
down	The interface is down, data transfer is not possible. In other words, there is no valid connection. For example, because the onboard G703 is not connected.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/ais

This attribute indicates (on / off) whether an alarm indication signal has been received on the interface.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/los

This attribute indicates (on / off) whether a loss of signal has occurred.

crocusIfConvNx64<Tt/Cv>/g703OnBoard/lfa

This attribute indicates (on / off) whether a loss of frame alignment has occurred. This attribute is only present on the Crocus Nx64 CNV.

7.4 Interface status attributes

This section discusses the status attributes of the different DTE interfaces. The following table gives an overview of this section.

Section	Title	Page
7.4.1	General interface status attributes	98
7.4.2	RS530, V35 and V36 interface status attributes	100
7.4.3	X21 interface status attributes	101
7.4.4	Bridge interface status attributes	102

Because some of the interface status attributes are present on every interface, they are discussed in a general section. All other sections discuss the interface specific attributes.

7.4.1 General interface status attributes

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/ifDescr

This attribute displays the modular DTE interface description. It is an SNMP MIB2 parameter.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/ifType

This attribute displays the modular DTE interface type. It is an SNMP MIB2 parameter.

The following table shows the ifDescr and ifType attribute for each modular DTE interface.

DTE interface	ifDescr value	ifType value
RS530	rs530	other
V35	v35	other
V36	v36	other
X21	x21	other
Bridge	bridge	ethernet-csmacd
Router	router	other

Continued on next page

General interface status attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/ifSpeed

This attribute displays the current DTE interface speed in bits per second (bps), e.g. 640000. When the DTE interface is down (ifOperStatus = down), the DTE interface speed is 0.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/ifOperStatus

This attribute displays the current operational status of the DTE interface. The possible indications are:

Value	Description
up	The DTE interface is up, data transfer is possible. In other words, there is a valid connection between the DTE and the interface.
down	The DTE interface is down, data transfer is not possible. In other words, there is no valid connection between the DTE and the interface. For example, because there is no connection between DTE and the interface.

Remarks

- In case of a Bridge interface, the ifSpeed attribute displays the speed on the LAN interface. In other words, when a LAN is connected (i.e. ifOperStatus = up) then the ifSpeed is always 10240000 bps, disregarding of the configuration attribute speed setting.
- In case of a Router interface the ifSpeed and ifOperStatus attributes display the speed and operational status between the *Router interface* and the *Crocus CNV*. This implies that as soon as you insert a Router interface in the Crocus CNV then the crocusIfConv<2m/Nx64><Tt/Cv>/router/ifOperStatus value becomes up, disregarding of the operational statuses on the Router interface itself. For that information you have to connect to the Router interface.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/ifClockingTx

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/ifClockingRx

These attributes display the clocking mode which is actually used by the Crocus CNV.

This is not necessarily the clocking mode you configured. It can be a clocking mode that is selected by the Crocus CNV because it was not possible to select the clocking mode of your choice (for example, because the external clock signal is lost).

7.4.2 RS530, V35 and V36 interface status attributes

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/txdltu103

This attribute displays the status (on / off) of the transmit data signal (circuit 103). The txdltu103 attribute only indicates the presence of the TxD signal, it does not monitor the real data signal.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/rxdltu104

This attribute displays the status (on / off) of the receive data signal (circuit 104). The rxdltu104 attribute only indicates the presence of the RxD signal, it does not monitor the real data signal.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/rtsltu105

This attribute displays the status (on / off) of the request to send signal (circuit 105).

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/ctsltu106

This attribute displays the status (on / off) of the clear to send signal (circuit 106).

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/dsrltu107

This attribute displays the status (on / off) of the data set ready signal (circuit 107).

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/dcdltu109

This attribute displays the status (on / off) of the data carrier detect signal (circuit 109).

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/rdlltu140

This attribute displays the status (on / off) of the remote digital loop signal (circuit 140).

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/alltu141

This attribute displays the status (on / off) of the analogue loop signal (circuit 141).

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/tiltu142

This attribute displays the status (on / off) of the test indication signal (circuit 142).

7.4.3 X21 interface status attributes

crocusIfConv<2m/Nx64><Tt/Cv>/x21/txdltu103

This attribute displays the status (on / off) of the transmit data signal (circuit 103). The txdltu103 attribute only indicates the presence of the TxD signal, it does not monitor the real data signal.

crocusIfConv<2m/Nx64><Tt/Cv>/x21/rxdltu104

This attribute displays the status (on / off) of the receive data signal (circuit 104). The rxdltu104 attribute only indicates the presence of the RxD signal, it does not monitor the real data signal.

crocusIfConv<2m/Nx64><Tt/Cv>/x21/indicator

This attribute displays the status (on / off) of the indicator signal.

7.4.4 Bridge interface status attributes

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/wanTxd

This attribute displays the status (on / off) of the WAN TxD (wide area network transmit data) signal, after encapsulation of the user data on the Bridge interface.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/wanRxd

This attribute displays the status (on / off) of the WAN RxD (wide area network receive data) signal, before extraction of the user data on the Bridge interface.

7.5 Management status attributes

The attributes cardSlotNumber, cardNestNumber and position are only present on a Crocus CNV Card Version, not on a Table Top.

crocusIfConv<2m/Nx64><Tt/Cv>/management/ifSpeed

This attribute displays the current management interface speed in bits per second (bps), e.g. 9600.

crocusIfConv<2m/Nx64>Cv/management/cardNestNumber

This attribute displays the CN4 card nest address.

It is possible to manage the Crocus CNV with the Orchid 1003 LAN management concentrator. In that case, the address of the CN4 card nest has to be known so that the Orchid can address the Crocus CNV.

The CN4 card nest address can be set with DIP switches at the back of the card nest. For more information, refer to the CN4 manual.

crocusIfConv<2m/Nx64>Cv/management/cardSlotNumber

This attribute displays in which slot of the CN4 card nest the Crocus CNV is situated.

It is possible to manage the Crocus CNV with the Orchid 1003 LAN management concentrator. In that case, the Crocus CNV its position in the CN4 card nest has to be known so that the Orchid can address the Crocus CNV.

crocusIfConv<2m/Nx64>Cv/management/position

This attribute displays the position of the converter (A or B) on the Card Version.

It is possible to manage the Crocus CNV with the Orchid 1003 LAN management concentrator. In that case, the position of the converter on the card has to be known so that the Orchid can address that particular converter.

7.6 Operating system status attributes

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/taskInfo

The taskInfo table displays status information about the operating system. The table contains the following attributes:

Attribute	Description
taskName	Name of the task.
taskStatus	Current status. The task can have the following status values: **Value** / **Description** awake – This task is actually running. asleep – This task is waiting on an event. inactive – This task slot is not active, i.e. no task has been assigned to this slot.
load30s (%)	This is the load on the processor during the last 30 seconds.
load5m (%)	This is the load on the processor during the last 5 minutes.
runningInMedium (%)	Each task can be running with a low, medium or high priority. This element gives the percentage of time this task is running with medium priority during the last 30 seconds.
runningInHigh (%)	Each task can be running with a low, medium or high priority. This element gives the percentage of time this task is running with high priority during the last 30 seconds. The percentage of time this task is running with low priority can be calculated using the following formula: 100% - runningInMedium (%) - runningInHigh (%).
programCounter	This is the current value of the program counter. The program counter is the memory address for the current instruction of this task.

8. Performance attributes

This chapter discusses the performance attributes of the Crocus CNV. The following table gives an overview of this chapter.

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8.3	G703 onboard performance attributes	109
8.4	Operating system performance attributes	113

8.1 Performance attribute overview

> crocusIfConv<2m/Nx64><Tt/Cv>

>> g703OnBoard

errorCount
h2Performance
h24Performance
g826Performance
h2G826Performance
h24G826Performance
g703Performance
h2G703Performance
h24G703Performance
Action: Test Activation

>> operatingSytem

currUsedProcPower (%)
freeDataBuffers
totalDataBuffers
largestFreeBlockSize
freeBlockCount
freeMemory
totalMemory
usedProcPower
taskInfo

8.2 Introducing the performance attributes

Performance information can be used for the following:

- If network problems arise, information about the history of the communication link can be reviewed and analysed. These statistics can be useful to locate and solve the problem.
- By collecting performance information, an operator can keep track of the global performance of the network, e.g. network bottlenecks can be traced, etc.

Before discussing the performance attributes of the Crocus CNV in detail, some general information on the performance attributes of the Crocus CNV is given.

This section can be broken up into two parts:

- First, the timing of the performance information is explained.
- Secondly, frequently used terms such as *sysUpTime*, *min, max, avrg*, *count* and *time* are explained.

Performance timing

The following table explains the performance information timing.

Interval	Description
2 hours	The performance information is accumulated during a 15 minutes time span, called a period. After a period, the accumulated performance information is written into a buffer. Then a new period starts. To cover a 2 hours interval, 8 periods are kept. The buffer in which the information is stored, is a circular buffer. I.e. every 15 minutes the most recent measured and calculated values are added, and the oldest values are lost.
24 hours	The performance information is accumulated during a 2 hours time span, called a period. After a period, the accumulated performance information is written into a buffer. Then a new period starts. To cover a 24 hours interval, 12 periods are kept. The buffer in which the information is stored, is a circular buffer. I.e. every 2 hours the most recent measured and calculated values are added, and the oldest values are lost.
since boot	In this case, the performance information is kept since the latest cold boot of the Crocus CNV. This can be considered as a performance information *summary*.

Table 8.1: Performance information timing

The Crocus CNV does not contain a real-time clock, therefore time information is related to its internal clock. To allow you to situate the time intervals in the real time, the sysUpTime attribute is returned together with the performance information.

Only the available performance information is displayed. If the interrogation happens shortly after boot, no values are displayed. For example for the 2 hours and 24 hours intervals, the new performance information is available only when a complete time span (15 minutes, 2 hours) has elapsed.

Continued on next page

Introducing the performance attributes (continued)

Performance terms

The following table explains the performance information terms.

Term	Description
sysUpTime	Displays the elapsed time since the last cold boot.
min, max, avrg	Display the minimum, maximum and average values calculated for the corresponding period. E.g. min-max-avrg value of the bit error rate.
count	Counts the number of times an event occurred during the corresponding period. E.g. the number of loss of signal alarms.
time	Indicates the time duration of an event during the corresponding period. E.g. the time during which a loss of signal alarm was present.

Table 8.2: Performance information terms

8.3 G703 onboard performance attributes

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/errorCount

This attribute displays the amount of detected errors since the start of an ET, AL-ET or RDL-ET test. Every time a new ET, AL-ET or RDL-ET is started, the errorCount attribute is reset to 0.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/h2Performance

This structured value displays the 2 hours performance summary related to the performance. The h2Performance structured value elements are the following:

Element	For the corresponding period, this value displays …
sysUpTime	the elapsed time since the last cold boot.
lineAttenuationMin(dB)	the minimum G703 line attenuation that was measured.
lineAttenuationMax(dB)	the maximum G703 line attenuation that was measured.
lineAttenuationAvrg(dB)	the average G703 line attenuation that was calculated.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/h24Performance

This structured value displays the 24 hours performance summary related to the performance. The h24Performance elements are the same as the h2Performance elements.

Continued on next page

G703 onboard performance attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/g826Performance

This structured value displays the performance summary related to the G826 performance. The g826Performance structured value elements are the following:

Element	For the time since the last cold boot, this value displays …
linkDownCount	the number of times the G703 line went down.
linkDownTime	the total amount of time the G703 line was down.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/h2g826Performance

This structured value displays the 2 hours performance summary related to the G826 performance. The h2g826Performance structured value elements are the following:

Element	For the corresponding period, this value displays …
sysUpTime	the elapsed time since the last cold boot.
linkDownCount	the number of times the G703 line went down.
linkDownTime	the amount of time the G703 line was down.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/h24g826Performance

This structured value displays the 24 hours performance summary related to the G826 performance. The h24g826Performance elements are the same as the h2g826Performance elements.

Continued on next page

G703 onboard performance attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/g703Performance

This structured value displays the performance summary related to the G703 performance. The g703Performance structured value elements are the following:

Element	For the time since the last cold boot, this value displays …
aisCount	the number of times an Alarm Indication Signals was detected.
aisTime	the total amount of time an Alarm Indication Signal was detected.
losCount	the number of times a Loss Of Signal was detected.
losTime	the total amount of time a Loss Of Signal was detected.
lfaCount	the number of times a Loss of Frame Alignment was detected.
lfaTime	the total amount of time a Loss of Frame Alignment was detected.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/h2g703Performance

This structured value displays the 2 hours performance summary related to the G703 performance. The h2g703Performance structured value elements are the following:

Element	For the corresponding period, this value displays …
sysUpTime	the elapsed time since the last cold boot.
aisCount	the number of times an Alarm Indication Signals was detected.
aisTime	the total amount of time an Alarm Indication Signal was detected.
losCount	the number of times a Loss Of Signal was detected.
losTime	the total amount of time a Loss Of Signal was detected.
lfaCount	the number of times a Loss of Frame Alignment was detected. This element is only present on the Crocus Nx64 CNV.
lfaTime	the total amount of time a Loss of Frame Alignment was detected. This element is only present on the Crocus Nx64 CNV.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/h24g703Performance

This structured value displays the 24 hours performance summary related to the G703 performance. The h24g703Performance elements are the same as the h2g703Performance elements.

Continued on next page

G703 onboard performance attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/Test Activation

Use this action to perform a test on the Crocus CNV. These tests are useful to trace possible problems. Possible tests are: no, al, dl, rdl, et, alEt, rdlEt.

To execute a test, proceed as follows:

Step	Action
1	In the TMA window, select the object g703OnBoard and the group Performance.
2	In the action window of TMA, click the left mouse button on the field under the heading Argument Value. ⇒ A drop down box appears.
3	In the drop down box, select the test you want to execute.
4	Press the right mouse button and select *Execute*.

Table 8.3: Executing a test

For more information on these tests, refer to Chapter 12 - Diagnostic tests.

8.4 Operating system performance attributes

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/currUsedProcPower (%)

This is the amount of processing power used during the last 650 milliseconds, expressed as a percentage of the total available processing power.

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/freeDataBuffers

The processor uses buffers for storing the packets during processing and/or queuing. Each buffer has a 256 byte size, headers included. This attribute is the number of data buffers currently not in use and available for e.g. incoming data.

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/totalDataBuffers

This is the total number of available data buffers.

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/largestFreeBlockSize

The processor uses RAM memory for storing internal information and buffering (see totalDataBuffers). The different tasks allocate RAM memory on request. Tasks may also free memory again. In this way the total RAM memory becomes fragmented. This attribute gives the size of the largest contiguous free memory block expressed in bytes.

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/freeBlockCount

This is the number of free contiguous memory blocks.

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/freeMemory

This is the total free memory expressed in bytes.

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/totalMemory

This is the total RAM memory expressed in bytes.

Continued on next page

Operating system performance attributes (continued)

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/usedProcPower

This table lists the used processing power for the 11 most recent 30 seconds intervals. The processing power is expressed as a percentage of the total processing power. Each entry in the attribute usedProcPower is composed of the following attributes:

Value	Description
sysUpTime	Displays the elapsed time since the last cold boot. The next values are for the 30 seconds period before this relative time stamp.
minimumPP (%)	This is the minimum percentage of processing power in use during the last 30 seconds.
averagePP (%)	This is the average percentage of processing power in use during the last 30 seconds.
maximumPP (%)	This is the maximum percentage of processing power in use during the last 30 seconds.

crocusIfConv<2m/Nx64><Tt/Cv>/operatingSystem/taskInfo

This attribute contains status information concerning the different tasks running on the processor. It is a table grouping up to 31 task slots, which is the maximum number of parallel tasks running on the processor's operating system.

This attribute contains the same information as taskInfo in the status group (refer to Section 7.6 - Operating system status attributes).

9. Alarm attributes

This chapter discusses the alarm attributes of the Crocus CNV. The following table gives an overview of this chapter.

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9.5	Interface alarms	124

9.1 Alarm attribute overview

> crocusIfConv<2m/Nx64><Tt/Cv>

- totalAlarmLevel
- alarmInfo
  - notResponding
  - alarmSyncLoss
  - configChanged
  - access
  - remoteAlarm (1)
  - powerSupply1CvFail (2)
  - powerSupply2CvFail (2)
  - unknownState
  - coldBoot
  - warmBoot
  - codeConsistencyFail
  - configConsistencyFail

(1) only present on the Crocus Nx64 CNV
(2) CV only

>> g703OnBoard

- alarmInfo
  - linkDown
  - ais
  - sevErroredSecond
  - testActive
  - lfa (3)

(3) only present on the Crocus Nx64 CNV

>> rs530, v35, v36, x21, bridge, router (4)

- alarmInfo
  - linkDown

(4) only present when the corresponding interface is used

9.2 Introduction to the alarm attributes

Before discussing the alarm attributes of the Crocus CNV in detail, some general information on the alarm attributes of the Crocus CNV is given.

The following table gives an overview of this section.

Section	Title	Page
9.2.1	Configuration alarm attributes	118
9.2.2	General alarm attributes	120

9.2.1 Configuration alarm attributes

The following four configuration alarm attributes are already explained in Chapter 6 - Configuration attributes, but are explained more thoroughly below.

crocusIfConv<2m/Nx64><Tt/Cv>/.../alarmMask

crocusIfConv<2m/Nx64><Tt/Cv>/.../alarmLevel

crocusIfConv<2m/Nx64>Cv/.../alarmContactHighMask

crocusIfConv<2m/Nx64>Cv/.../alarmContactLowMask

The following table explains the configuration alarm attributes.

Attribute	Description
alarmMask	The alarmMask attribute enables or disables for each alarm of the corresponding object, whether it is communicated to the central management system (e.g. HP OpenView®) or not. Alarms are always seen in the alarmInfo of an object, regardless of the masking of the alarm. I.e. even if an alarm is set to *disabled* in the alarmMask of an object, if the alarm condition is fulfilled then the alarm will be set to *on* in the alarmInfo of that object. Also the alarm count and time in the performance information will increment. However, because this alarm is disabled: • it will not be sent to the central management system (e.g. HP OpenView®) • it will not cause a change of colour in the subsystem picture (refer to Chapter 10 - TMA subsystem picture of the Crocus CNV) • the bit string currentAlarms will not be shifted towards the value previousAlarms of the alarmInfo attribute (refer to Table 9.2: General alarm attributes – the alarmInfo attribute).
alarmLevel	With this attribute, a priority level can be assigned to each alarm of the corresponding object. The alarm level ranges from 0 to 254, where 0 is the lowest and 254 is the highest priority level. The alarmLevel of an unmasked, active alarm is sent to the totalAlarmLevel of the top object crocusIfConv<2m/Nx64><Tt/Cv>.

Continued on next page

Configuration alarm attributes (continued)

Attribute	Description
alarmContactHighMask (CV only)	The alarmContactHighMask attribute enables or disables for each alarm of the corresponding object, whether: • a visual indication is generated (blinking error LED) • the alarm contacts on the CN4 card nest are driven • an alarm is sent to the remote Crocus CNV (only on the Crocus Nx64 CNV in framed mode).
alarmContactLowMask (CV only)	The alarmContactLowMask attribute enables or disables for each alarm of the corresponding object, whether: • a visual indication is generated (blinking error LED) • the alarm contacts on the CN4 card nest are driven • an alarm is sent to the remote Crocus CNV (only on the Crocus Nx64 CNV in framed mode).

Table 9.1: Configuration alarm attributes

9.2.2 General alarm attributes

The general alarm attributes totalAlarmLevel and alarmInfo are explained below.

crocusIfConv<2m/Nx64><Tt/Cv>/totalAlarmLevel

This attribute is only present in the top object of the containment tree of the Crocus CNV, crocusIfConv<2m/Nx64><Tt/Cv>.

It displays the priority level of an unmasked, active alarm. When several alarms are generated at the same time, the highest priority level is shown. If the alarm levels are set in a structured manner, one look at the totalAlarmLevel attribute enables the operator to make a quick estimation of the problem.

The value of the totalAlarmLevel attribute is also communicated to the central management system (e.g. HP OpenView®) where it determines the colour of the icon. This colour is an indication of the severity of the alarm.

crocusIfConv<2m/Nx64><Tt/Cv>/…/alarmInfo

The alarmInfo contains the actual alarm information of the corresponding object. The alarmInfo attributes are:

Attribute	Displays for the corresponding object …
discriminator	the total alarm count since the last cold boot.
currentAlarms	the current alarms.
previousAlarms	the second most recent alarms. However, only in case the most recently generated alarm was an unmasked alarm (refer to Table 9.1: Configuration alarm attributes, the alarmMask attribute).
alarmMask	the alarmMask as configured in the Configuration group. Refer to Chapter 6 - Configuration attributes.
alarmLevel	the alarmLevel as configured in the Configuration group. Refer to Chapter 6 - Configuration attributes.

Table 9.2: General alarm attributes – the alarmInfo attribute

9.3 General alarms

Refer to Section 9.2 - Introduction to the alarm attributes for the general alarm attributes.

crocusIfConv<2m/Nx64><Tt/Cv>/alarmInfo

The different alarms related to the crocusIfConv<2m/Nx64><Tt/Cv> object together with their explanation and their default alarmMask and alarmLevel value are given in the following table:

The alarm …	is generated …	Default value	
		alarmMask	alarmLevel
notResponding	when the Crocus CNV does not respond on the polling session of the Orchid 1003 LAN.	enabled	4
alarmSyncLoss	when the internal alarm buffer overflows.	enabled	4
configChanged	when the configuration of the Crocus CNV is changed.	disabled	1
access	when a TMA connection is made through the auxiliary connector of the Crocus CNV (not when a TMA connection is made via the Orchid 1003 LAN).	disabled	1
remoteAlarm	when the remote Crocus CNV is in alarm condition. This allows you to perform alarm signalling using the alarmContactLowMask and alarmContactHighMask attributes. This is particularly interesting when you do not have a central management system. This alarm exists on the Crocus Nx64 CNV only. Moreover, it only functions in framed mode.	disabled	0
powerSupply1CvFail	when the upper power supply in the CN4 card nest is not present or fails. This alarm exists on the CV only.	disabled	3
powerSupply2CvFail	when the lower power supply in the CN4 card nest is not present or fails. This alarm exists on the CV only.	disabled	3
unknownState	each time a new Crocus CNV is added to the network and before the Orchid 1003 LAN has completed a first successful polling session.	disabled	0
coldBoot	each time the Crocus CNV performs a cold boot.	disabled	1
warmBoot	each time the Crocus CNV performs a warm boot.	disabled	1

Continued on next page

General alarms (continued)

The alarm …	is generated …	Default value	
		alarmMask	alarmLevel
codeConsistencyFail	when the software consistency imposed by the Orchid 1003 LAN on the Crocus CNV fails. For example, because of a loss of contact. Check the status attribute o1003/nmsgroup/softConsistencyStatus to determine the problem.	disabled	1
configConsistencyFail	when the configuration consistency imposed by the Orchid 1003 LAN on the Crocus CNV fails. For example, because of a loss of contact. Check the status attributes o1003/nmsgroup/objectTable/configState and configDiag to determine the problem.	disabled	1

9.4 G703 onboard alarms

Refer to Section 9.2 - Introduction to the alarm attributes for the general alarm attributes.

crocusIfConv<2m/Nx64><Tt/Cv>/g703OnBoard/alarmInfo

The different alarms related to the object g703OnBoard together with their explanation and their default alarmMask and alarmLevel value are given in the following table:

The alarm …	is generated …	Default value	
		alarmMask	alarmLevel
linkDown	when there is a loss of signal. I.e. the incoming G703 transmit data (data coming from the application) is no longer present.	enabled	3
ais	when an alarm indication signal has been detected on the incoming G703 transmit data. It means the application has detected an error.	disabled	3
sevErroredSecond	when during a one second period the bit error rate equals or exceeds 10^{-3}. For each second the alarm condition is true, the alarm is activated. If a non-severely erroneous second occurs, the alarm is cleared. The measurement is conform the G.821 recommendation.	disabled	0
testActive	when a test is active.	disabled	1
lfa	when the frame alignment signal (FAS), which is present in time slot 0 of the G.704 framed data, is not detected after a certain period. This alarm exists on the Crocus Nx64 CNV only.	disabled	2

9.5 Interface alarms

Refer to Section 9.2 - Introduction to the alarm attributes for the general alarm attributes.

crocusIfConv<2m/Nx64><Tt/Cv>/<dteInterface>/alarmInfo

The different alarms related to the <dteInterface> object together with their explanation and their default alarmMask and alarmLevel value are given in the following table:

The alarm …	is generated …	Default value	
		alarmMask	alarmLevel
linkDown (for RS530, V35, V36I)	when no RTS signal is detected. I.e. the connection between the Crocus CNV and the DTE is down. The linkDown alarm is only generated if the attribute rtsControl is set to external. If the attribute rtsControl is set to internal, the linkDown alarm will never be generated.	enabled	3
linkDown (for X21)	when no valid C signal is detected. I.e. the connection between the Crocus CNV and the DTE is down.	enabled	3
linkDown (for Bridge)	when there is no connection with the LAN. I.e. the LAN is not connected or no valid LAN signals are present.	enabled	3
linkDown (for Router)	when there is no connection between the router and the Crocus CNV. Because this connection is made by the interface connector, it is highly unlikely that this alarm will be generated. However, when it does occur it might indicate that the router interface is faulty.	enabled	3

10. TMA subsystem picture of the Crocus CNV

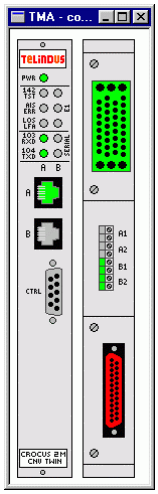
The subsystem picture is a TMA tool which visualises the status information of the Crocus CNV. This chapter explains how to display the subsystem picture, and how to interpret the visual indications. The following table gives an overview of this chapter.

Section	Title	Page
10.1	Displaying the subsystem picture	126
10.2	Subsystem picture elements	127

Note that the figures in this chapter are those of a Crocus CNV CV. Although the subsystem picture of the TT has a different layout, the interpretation of the visual indications is the same.

10.1 Displaying the subsystem picture

To display the subsystem picture of the Crocus CNV, proceed as follows:

Step	Action
1	Establish a link between TMA and the Crocus CNV through the auxiliary connector. Refer to Section 4.2 - Connecting to a Crocus CNV with TMA.
2	In the TMA window, press on the subsystem picture button: . The subsystem picture is displayed: 
3	To close the subsystem picture, press .

10.2 Subsystem picture elements

This section displays and labels the different elements of the subsystem picture. It also explains how the visual indications should be interpreted. Below, the Crocus CNV CV subsystem picture is displayed.

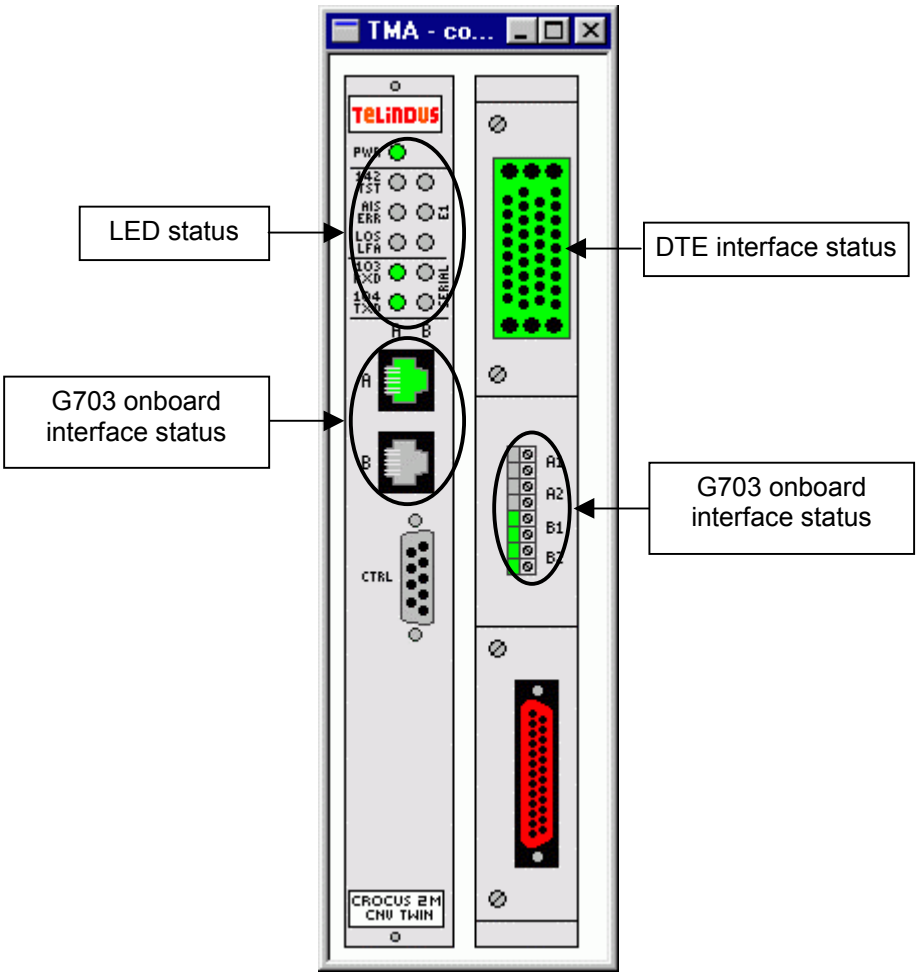


Figure 10.1: Subsystem picture elements

Continued on next page

Subsystem picture elements (continued)

The table below gives an overview of the subsystem picture elements and what they indicate.

<table>
<tr><th>Element</th><th>Description</th></tr>
<tr><td>LED indicators</td><td>They reflect the actual status of the Crocus CNV. The LED indication on the subsystem picture corresponds with the LED indication on the Crocus CNV itself. For more information on the interpretation of the LEDs, refer to Section 2.8 - Front panel LED indicators.</td></tr>
<tr><td>G703 onboard interface status</td><td>This reflects the status of the onboard G703 interface. Depending on which interface connector you selected (the RJ45 on the front or the connector block at the back), the front or rear connector will be coloured.
The possible indications are:
<table>
<tr><th>Colour</th><th>Explanation</th></tr>
<tr><td>green</td><td>No alarm of the g703OnBoard object is active.</td></tr>
<tr><td>red</td><td>An (unmasked) alarm of the g703OnBoard object is active.</td></tr>
</table>

The colours of the onboard G703 interface only change if the alarms related to the g703OnBoard object are set to enabled in the alarmMask. Refer to Section 6.3 - G703 onboard configuration attributes.</td></tr>
<tr><td>DTE interface</td><td>This reflects the status of the DTE interface. The possible indications are:
<table>
<tr><th>Colour</th><th>Explanation</th></tr>
<tr><td>none</td><td>If the DTE interface slot in the subsystem picture is blank, it means that no DTE interface module was present at power-up.</td></tr>
<tr><td>green</td><td>No alarm of the <dteInterface> object is active.</td></tr>
<tr><td>red</td><td>An (unmasked) alarm of the <dteInterface> object is active.</td></tr>
</table>
The layout of the connector also gives an indication of the type of DTE interface which is currently used in the Crocus CNV.

The colours of the DTE interface only change if the alarms related to the <dteInterface> object are set to enabled in the alarmMask. Refer to Section 6.4 - Interface configuration attributes.</td></tr>
</table>

11. Firmware download

This chapter explains how to download new firmware into the flash memory of the Crocus CNV. The following table gives an overview of this chapter.

Section	Title	Page
11.1	Downloading with TMA	130
11.2	Downloading with TML	131
11.3	Downloading in boot mode	132
11.4	Downloading via the Orchid 1003 LAN	133

11.1 Downloading with TMA

To download firmware with TMA, proceed as follows:

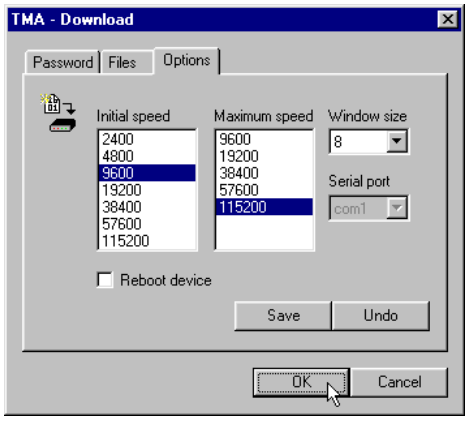
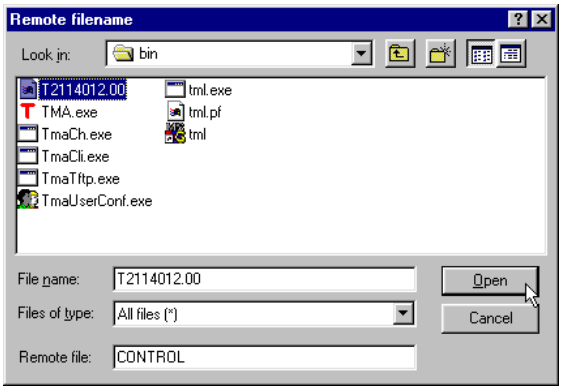
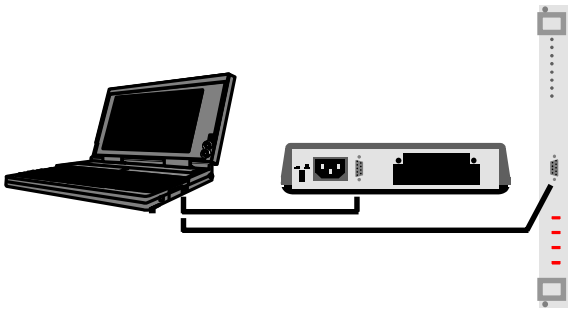
Step	Action
1	Establish a link between TMA and the Crocus CNV through the auxiliary connector. Refer to Section 4.2 - Connecting to a Crocus CNV with TMA.
2	In the TMA window select *Tools* → *Download…*
3	In the *TMA – Download* window, select the *Options* tab. Here it is a good practice to set the initial transfer speed to 9600 bps. If you set the maximum transfer speed to 115200 bps, the actual transfer speed will be negotiated between the computer and the Crocus CNV and will be between 9600 bps and 115200 bps. 
4	In the *TMA – Download* window, select the *Configuration* tab, and press *Add…*
5	In the *Remote filename* window: 1. Select the filename you want to download (Txxxxxxx.00). 2. Type CONTROL in the *Remote file* field. 3. Press *Open*. 
6	When the *TMA – Download* window reappears, press *OK*. ⇒ A DOS window opens and shows the download progress.

Table 11.1: Downloading firmware with TMA

11.2 Downloading with TML

When downloading with TMA (as explained in the previous section), you actually evoke TML (Telindus Memory Loader) through TMA. You can also use TML without opening TMA.

To download firmware with TML, proceed as follows:

Step	Action
1	Connect a serial port of your computer (e.g. COM1) through a straight DB9 male - female cable with the auxiliary connector of your Crocus CNV as shown in the following figure: 
2	Open a DOS window on your computer.
3	Go to the directory where the TML executable is located. Typically this is *C:\Program Files\TMA*.
4	Place the firmware file you want to download in this directory.
5	Type the following command: `tml -c1 –v -f<Txxxxxxx.00>@CONTROL` where … • `tml` is the executable (Telindus Memory Loader) to download files to the Telindus devices through their auxiliary port • `-c1` specifies the COM port of the computer connected to the Crocus CNV (in this example COM1) • `-v` returns graphical information on the download status • `-f<Txxxxxxx.00>` is the firmware file you want to download (e.g. T1212001.00) • `CONTROL` (in capitals!) specifies that the destination is a flash bank of the Crocus CNV. To see a list of all the possible TML options: type `TML` in your DOS windows and press the ENTER key.
6	If you press the ENTER key, the firmware download begins. If you used the –v option together with the TML command, a graphical bar shows the download progress.

11.3 Downloading in boot mode

When a flash memory software download has failed or when a flash memory error occurs, it may be possible that the Crocus CNV becomes inaccessible. In that case, new software can still be downloaded by setting the Crocus CNV in boot mode. This is done by means of the start-up mode DIP switch.

The location of the start-up mode DIP switch is:

DIP switch name	DS5 (TT) no. DS2 (CV) no.	Setting	Function
start-up mode	1	**on**	Start up from flash memory.
		off	Start up in boot mode.

The Crocus CNV can be forced in boot mode by setting the appropriate DIP switch to *off*. If a new software download is successfully completed, the DIP switch must be reset to *on* in order to restart operation from flash memory.

Note that this DIP switch setting cannot be overruled by TMA.

To download firmware to a Crocus CNV in boot mode, proceed as follows:

Step	Action
1	In case of a … • TT, open the housing as described in Section 3.1.4 - Changing DIP switch and strap settings of the Table Top. • CV, remove the card from the CN4 card nest as described in Section 3.2.5 - Changing DIP switch and strap settings of the Card Version.
2	In case of a … • TT, set DIP switch bank DS5 position 1 to *off*. To locate this DIP switch bank, refer to Section 3.1.1 - Location of the DIP switches and straps on the Table Top. • CV, set DIP switch bank DS2 position 1 to *off*. To locate this DIP switch bank, refer to Section 3.2.1 - Location of the DIP switches on the Card Version.
3	In case of a … • TT, close the housing without fastening the screws. • CV, insert the card in the CN4 card nest without fastening the screws. ⇒ The Crocus CNV is now in boot mode.
4	Now proceed as explained in the previous section, Section 11.2 - Downloading with TML.
5	When the download is finished, reset the corresponding DIP switch to *on*. Refer to step 2.
6	In case of a … • TT, close the housing. • CV, insert the card in the CN4 card nest. ⇒ The Crocus CNV reboots in normal operation mode.

11.4 Downloading via the Orchid 1003 LAN

If many Crocus CNV Card Version modems need a firmware update, it is more efficient to use the software distribution feature of the Orchid 1003 LAN management concentrator. In that case, the firmware file that is present on the file system of the Orchid 1003 LAN is downloaded over the high speed bus to the Crocus CNV CV.

Also the Crocus CNV CVs their remote counterparts (which are often Table Tops) can get a firmware update using the Orchid its software distribution feature.

For more information, refer to the Orchid 1003 LAN manual.

12. Diagnostic tests

This chapter describes the diagnostic tests of the Crocus CNV. The following table gives an overview of this chapter.

Section	Title	Page
12.1	Error test	135
12.2	Analogue loop	136
12.3	Remote digital loop	137
12.4	Digital loop	138
12.5	Interface tests	139

12.1 Error test

Initiating the ET test activates the internal error test pattern generator and detector. Possible errors which are received by the detector are accumulated in an internal register. The amount of errors can be seen with TMA, namely in the status attribute errorCount of the g703OnBoard object. The error LED on the front panel will also light.

How to use this test?

Example:

Suppose you have a set-up with two Crocus CNVs connected with each other through their onboard G703 interfaces (i.e. a simple “modem” connection).

Phase	Description
1	Start an ET test on the local Crocus CNV. ⇒ A test pattern is sent down the G703 line.
2	Start an ET test on the remote Crocus CNV. ⇒ The detector of the remote Crocus CNV receives this test pattern, and looks for possible errors in the pattern. The quantity of errors could be an indication of the G703 line quality.

12.2 Analogue loop

Initiating the AL test establishes an analogue loop on the local Crocus CNV. This loop is compliant to loop 3 as described in the ITU-T recommendation V.54.

The loop is situated immediately behind the onboard G703 interface of the Crocus CNV, schematically represented as follows:

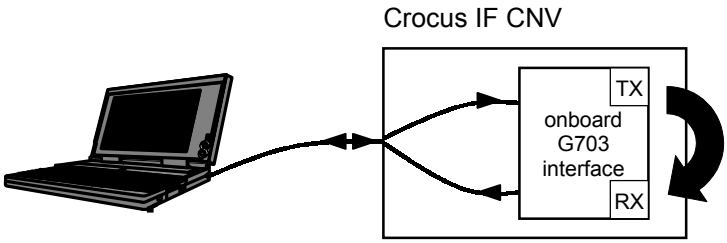


Figure 12.1: Analogue loop

How to use this test?

Example:

Start an ALET test on the Crocus CNV. This is a sort of *self-test* of the Crocus CNV. The quantity of errors (check the status attribute errorCount) could be an indication of possible problems on the Crocus CNV.

12.3 Remote digital loop

Initiating the RDL test establishes a digital loop on the remote Crocus CNV. This loop is compliant to loop 2 as described in the ITU-T recommendation V.54.

The loop is situated immediately behind the DTE interface of the remote Crocus CNV, schematically represented as follows:

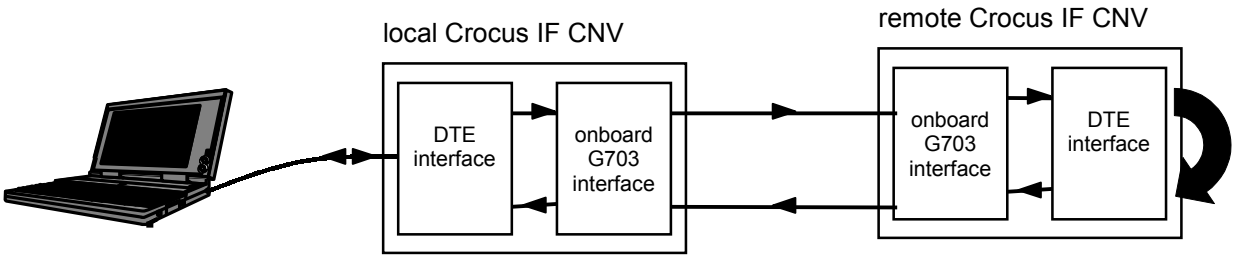


Figure 12.2: Remote digital loop

An RDL test can be ended by sending a 2^15-1 pattern.

How to use this test?

Example:

Suppose you have a set-up with two Crocus CNVs connected with each other through their onboard G703 interfaces (i.e. a simple “modem” connection).

Phase	Description
1	Start an RDL test on the local Crocus CNV or start a DL test on the remote Crocus CNV. ⇒ A digital loop is established on the remote Crocus CNV.
2	Start an ET test on the local Crocus CNV. ⇒ A test pattern is sent down the line.
3	Because the remote side is in a digital loop, the test pattern returns to the local Crocus CNV.
4	The detector receives this test pattern, and can compare it with the original transmitted pattern. ⇒ The quantity of inconsistencies that might exist between the original and the returned pattern could be an indication of the line quality.

Important remark

On a Crocus 2M CNV CV and on a Crocus Nx64 CNV CV in unframed mode, it is not possible to start an RDL test or receive a DL test from the remote side when the device is strapped in short haul (i.e. longHaul = disabled). However, it is possible to start a DL test directly on the device itself.

12.4 Digital loop

Initiating the DL test also establishes a digital loop, but on the local Crocus CNV itself. This loop is compliant to loop 2 as described in the ITU-T recommendation V.54.

The loop is situated immediately behind the DTE interface of the remote Crocus CNV, schematically represented as follows:

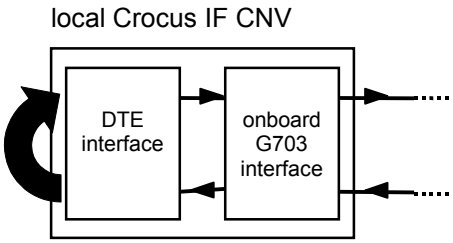


Figure 12.3: Digital loop

How to use this test?

With this test, you can verify the same things as with the remote digital loop. The only difference is that the loop is not made on the *remote* Crocus CNV (as with RDL), but on the *local* Crocus CNV. This can be necessary when, for example, the remote Crocus CNV is unable to initiate a remote digital loop test.

12.5 Interface tests

For some DTE interfaces it is possible that the application (the DTE) initiates a test on the Crocus CNV via the interface. The following table gives an overview of which tests are available on which interfaces. It also gives a short description of the available tests.

Interface	Available tests	Description
RS530, V35, V36	interfaceAl	The activation of the AL test signal (circuit 141) initiates an analogue loop (loop 3) on the local Crocus CNV, in compliance with ITU-T recommendation V.54. Refer to Section 12.2 - Analogue loop.
	interfaceRdl	The activation of the RDL test signal (circuit 140) initiates a digital loop (loop 2) on the remote Crocus CNV, in compliance with ITU-T recommendation V.54. Refer to Section 12.3 - Remote digital loop.

13. Technical specifications

This chapter gives the technical specifications of the Crocus CNV. The following table gives an overview of this chapter.

Section	Title	Page
13.1	Crocus CNV types	141
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13.3	Management interface	143
13.4	Auxiliary connector	143
13.5	Power requirements	144
13.6	Mechanical dimensions	144
13.7	Requirements	145

13.1 Crocus CNV types

The basic types of the Crocus CNV are:

- Crocus 2M CNV CV
- Crocus Nx64 CNV CV
- Crocus Nx64 CNV TT

Both Table Top and Card Version can be powered with 230/115 Vac, -48 Vdc or 48 Vac. The Card Versions are powered via the CN4 card nest.

13.2 Onboard G703 interface

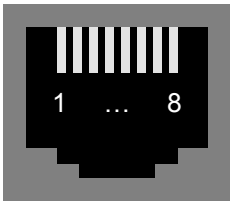
Onboard G703 interface specifications

The onboard G703 interface have the following specifications:

Parameter	Description
connector	front RJ45 or rear line connector block (strap selectable)
impedance	75 Ohm or 120 Ohm (strap selectable)
compliance	ITU-T G.703
coding	HDB3 or AMI
speed	2048 kbps
acceptable jitter	compliant to G.823

RJ45 connector pin layout (TT and CV)

The front RJ45 connector has the following pin layout:

Pin	Signal	DTE	Figure
1	receive A (RxA)	input	
2	receive B (RxB)	input	
3	signal ground	-	
4	transmit A (TxA)	output	
5	transmit B (TxB)	output	
6	signal ground	-	
7	not used	-	
8	not used	-	

Rear line connector block (on CN4) pin layout (for CV only)

The rear line connector block on the CN4 has the following pin layout:

Converter no.	RX / TX	Line connector block positions	DTE
converter A	receive	1 and 2	input
	transmit	3 and 4	output
converter B	receive	5 and 6	input
	transmit	7 and 8	output

13.3 Management interface

The possible management interfaces are:

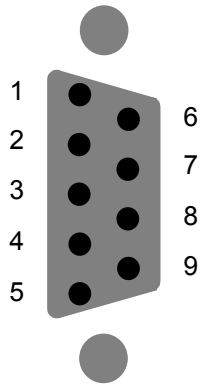
Management interface	Connector	Speed
asynchronous through the auxiliary connector	9 pins subD (on the Crocus CNV)	9600 bps, 8+N
synchronous through the Orchid 1003 LAN	RJ45 (on the CN4 card nest)	800 kbps

13.4 Auxiliary connector

The auxiliary connector (sometimes also called control port) is a 9 pins subD connector that is labelled CTRL. The signals on these connector are V.24 / V.28 signals.

The auxiliary connector layout

The auxiliary connector has the following pin layout:

Pin	Signal	DCE	Figure
1	not used	-	
2	NMS RxD	output	
3	NMS TxD	input	
4	not used	-	
5	GND	-	
6	not used	-	
7	NMS RTS	input	
8	NMS CTS	output	
9	not used	-	

Remarks

- The connection with TMA can be made with a straight 9 pins subD (Male/Female) cable or a regular 25/9 pins subD adapter cable.
- For a Table Top, the cable to connect the TT with the Orchid 1003 LAN management concentrator can be ordered at the distributor (code 149220).
- For a Card Version, the connection to the Orchid 1003 LAN management concentrator is made through the high speed bus of the CN4 card nest. Refer to the CN4 manual for more information.

13.5 Power requirements

The input power recommendations are:

- 230 Vac +/- 10%, 45 – 60 Hz
- 115 Vac +/- 10%, 45 – 60 Hz
- 48 Vdc (36 – 72 Vdc)

The maximum power consumption is 7.2 W.

13.6 Mechanical dimensions

The mechanical dimensions are as follows:

Dimensions	Table Top	Card Version	CN4 Card Nest
height (mm)	45	20	270
width (mm)	220	235	445 without rackmounts
depth (mm)	215 excl. interface 235 incl. interface	300	330 excl. interface 350 incl. interface
weight (kg)	0,75 (excl. interface)	1	6.1 (excl. cards)

13.7 Requirements

The requirements are as follows:

Parameter	Description
environmental requirements	ETSI ETS 300 019-1-3 Class 3.1 and 3.1e
ambient operational temperature	-10°C to 50°C
storage temperature	-25°C to +70°C
maximum altitude	3000 m
relative humidity	0% to 95% non-condensing
safety requirements	• EN60950 ed 2:1998 + A1:1993 + A2:1993 + A3:1996 + A4:1997 + A11:1997 • Class 1 equipment for 230/115 Vac Table Tops with an internal power supply. • Class 3 equipment for 48 Vdc Table Tops, Table Tops with an external power supply and Card Versions.
EMC requirements	• EN55022 B:1994 + A1:1995 • EN61000-4-2:1995 ESD • EN61000-4-3:1995 radiated immunity • EN61000-4-4:1995 EFT/BURST • EN61000-4-5:1995 surge • EN61000-4-6:1995 conducted immunity • EN61000-4-8:1993 power magnetic field immunity • EN61000-4-11:1994 voltage dips & drops • ENV50204:1995 radiated immunity against digital radio telephone

Annexes

Annex A: abbreviations

The following table gives a list of abbreviations and their description.

Abbreviation	Description
AIS	Alarm Indication Signal
AL	Analogue Loop
AMI	Alternate Mark Inversion
BER	Bit Error Rate
bps	bits per second
CN4	Card Nest 4
CRC	Cyclic Redundancy Check
CTRL	ConTRoL
CTS	Clear To Send
CV	Card Version
CV-A	Card Version modem A
CV-B	Card Version modem B
DCE	Data Communications Equipment
DIP	Dual In line Pin
DL	Digital Loop
DS	Dip Switch bank
DTE	Data Terminal Equipment
ERR	Error
ET	Error Test
ExtTxClk	External Transmit Clock
FAS	Frame Alignment Signal
FO	Fibre Optic
HDB3	High Density Bipolar 3
HDSL	High bit rate Digital Subscriber Line
if	interface
IP	Internet Protocol
LAN	Local Area Network
LED	Light Emitting Diode
LFA	Loss of Frame Alignment
LOS	Loss Of Signal

Continued on next page

Annex A: abbreviations (continued)

Abbreviation	Description
MIB	Management Information Base
NMS	Network Management System
PWR	Power
RDL	Remote Digital Loop
RTS	Request To Send
Rx	Receive
RxClk	Receive Clock
RxD	Receive Data
SDSL	Symmetric Digital Subscriber Line
SELV	Safety Extra Low Voltage
SNMP	Simple Network Management Protocol
SSR	Solid State Relay
TMA	Telindus Maintenance Application
TML	Telindus Memory Loader
TNV	Telecom Network Voltage
TST	Test
TT	Table Top
Tx	Transmit
TxClk	Transmit Clock
TxD	Transmit Data
WAN	Wide Area Network

Annex B: product information

The following table displays the product information of the Crocus CNV.

Sales code	Product name	Description
171292	CROCUS 2M CNV TWIN-CV BU	Dual 2Mbps transparent G.703 to modular Crocus interface converter for CN4.
171289	CROCUS NX64 CNV TT BU 230V	2Mbps G.703/G.704 to modular Crocus interface converter powered with 230Vac. Replaces the BITS Nx64.
171290	CROCUS NX64 CNV TT BU 48VDC	2Mbps G.703/G.704 to modular Crocus interface converter powered with 48Vdc. Replaces the BITS Nx64.
171291	CROCUS NX64 CNV TWIN-CV BU	Dual 2Mbps G.703/G.704 to modular Crocus interface converter for CN4.
171973	Crocus 2M/NX64 CNV User and Reference manual	User and Reference manual for the Crocus 2M and Crocus Nx64K Interface converters.

The following table displays the product information of the Crocus DTE interfaces suitable for the Crocus CNV.

Sales code	Product name	Description
143666	V35 INTF. CROCUS	Plug-in modular interface V.35 transparent. Suitable for Crocus HS / HS-F/ SDSL-F/ HDSL / HDSL-F / FO10M / INV-MUX.
142199	V36 INTF.CROCUS	Plug-in modular interface V.36 transparent. Suitable for Crocus HS / HS-F/ SDSL-F/ HDSL / HDSL-F / FO10M / INV-MUX.
161611	RS-530 INTF.CROCUS	Plug-in modular interface RS-530 for Crocus HS / HS-F/ SDSL-F/ HDSL / HDSL-F / FO10M / INV-MUX.
142200	X21 INTF.CROCUS	Plug-in modular interface X.21 transparent. Suitable for Crocus HS / HS-F/ SDSL-F/ HDSL / HDSL-F / FO10M / INV-MUX.
150466	BRIDGE INTF.CROCUS	Plug-in modular interface Ethernet Bridge for direct UTP LAN connection. IEEE 802.3 compliant. Suitable for Crocus HS / HS-F/ SDSL-F/ HDSL / HDSL-F / FO10M / INV-MUX.
161613	ROUTER INTF.CROCUS	Plug-in modular interface Ethernet Router for direct UTP LAN connection. IEEE 802.3 compliant. Suitable for Crocus HS-F / SDSL-F / HDSL-F / FO10M (limited to 2M)